A·I·B·S

bulletin

NEWS AND VIEWS IN THE BIOLOGICAL SCIENCES

GENERAL PROGRAM · UNIVERSITY OF MINNESOTA · SEPTEMBER 10–12, 1951

published by THE AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

VOL. 1 AUGUST · 1951 NO. 4

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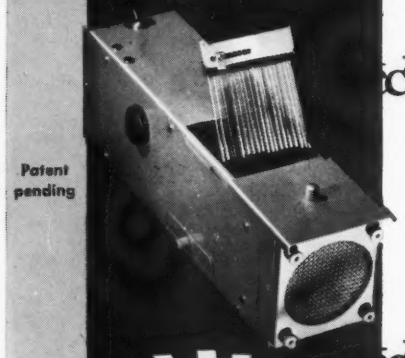

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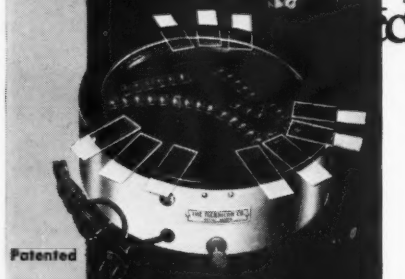

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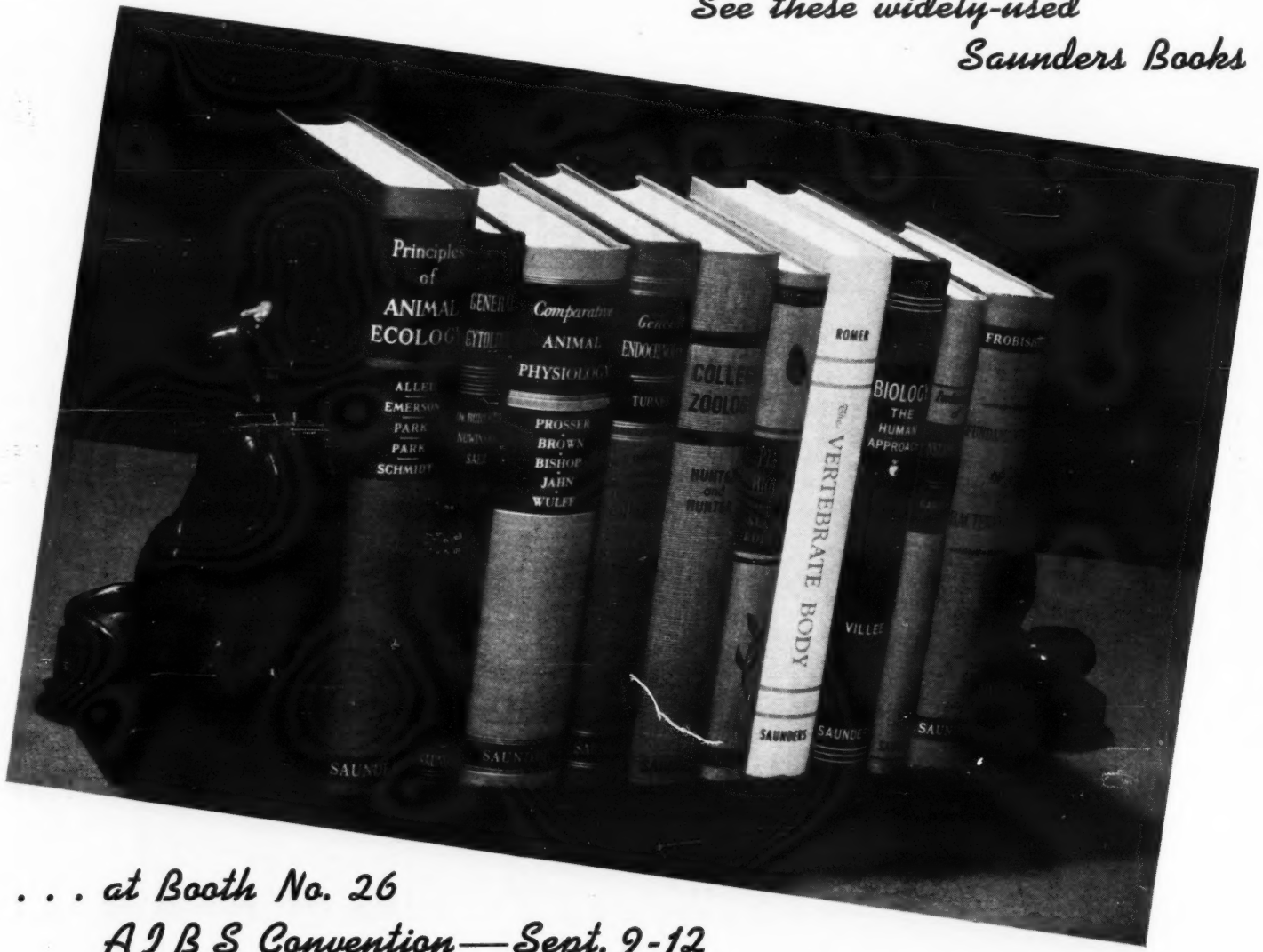

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THE AIBS BULLETIN

Editor, CLARENCE J. HYLANDER; *Managing Editor,* LEONARD D. PIGOTT

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GENERAL PROGRAM

of the

MEETING OF BIOLOGICAL SOCIETIES

Held at the

UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINNESOTA

September 10-12, 1951

★

Sponsored by

THE AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

★

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Acknowledgments

THE American Institute of Biological Sciences and the Committee on Local Arrangements are indebted to the administrative staff of the University and to the staff of the Coffman Memorial Union for their tireless efforts in making this meeting possible. Hundreds of details have to be anticipated and taken care of in order to permit a thousand or more visitors to "take over" all campus facilities for a three-day period. Without the University's full cooperation, such a meeting would be impossible.

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A general introductory text for colleges, the second edition of this well-known book has been revised for the incorporation of recent developments. Part I consists of general animal biology, including structure, physiology, reproduction, genetics, ecology, etc. Part II covers the animal kingdom from Protozoa to man. A revised edition of the laboratory manual to accompany *General Zoology* will be available.

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By MARY STUART MACDOUGALL, Agnes Scott College, and ROBERT HEGNER. 963 pages, $5.50.

Universally welcomed by teachers everywhere, this text tells the story of biology simply, yet scientifically. The authors have kept in mind the needs of beginning students and the preferences of instructors which has resulted in an adroit combination of the principles and the types course, an arrangement which allows an unusual degree of flexibility. Thus the book is particularly well adapted for use by teachers who wish to begin with the principles and refer students to outside reading for morphological details in preparation for laboratory work. At the same time it is admirably suited for teachers who prefer the types course, pointing out the principles illustrated by each type.

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I. GENERAL INFORMATION

1. THE UNIVERSITY OF MINNESOTA, A HISTORICAL SKETCH

IN February, 1851, two years after the territory of Minnesota had been officially taken over from the Indians, the Legislative Assembly of this newly organized area chartered the University. Two townships were reserved for the new project and the first building was erected—a two-story structure that cost the Board of Regents $2,500. Today, a century later, over one hundred buildings form the Minneapolis and St. Paul campuses, accommodating some 20,000 students.

This is the University's centennial year. One of the highlights of the celebration was the publication by the University of Minnesota Press of a history of the University by James Gray. In this book the personalities of the campus and the story of the growth of an institution are woven together in a thoroughly delightful manner that gives life again to the hundred years that have passed.

In 1873 the first two graduates of the University of Minnesota were granted their degrees. Since then over 100,000 degrees have been awarded. Many of the well-known names of the country—scientists, educators, and politicians alike—can be counted among these graduates. Famous also are many of the faculty.

As early as 1872 the Legislature founded a Geological and Natural History Survey which was housed at the University and placed under the directorship of the energetic geologist N. H. Winchell. The Survey sponsored research in botany and zoology as well as geology, and the names of MacMillan and Nachtrieb appear responsible for much of this early biological work. Many splendid monographs on the flora and fauna of Minnesota were published at this time.

About 1880 the University purchased an experimental Fruit Farm at Lake Minnetonka, and it was there that Peter Gideon developed the Wealthy apple and named it after his wife. In 1881 the Morril Act funds allocated to Minnesota were put to use in establishing a College of Agriculture under the leadership of Edward D. Porter. He procured the land in St. Paul that forms the present site of the Department of Agriculture and there laid the foundations of the school that has contributed so much to the development of the Midwest.

The Hatch Act of 1887 allowed for the staffing of an experiment station in agricultural research. Today five such stations are scattered throughout the state. The names of Otto Luger, entomologist, and Theophilus Haecker, dairy expert, appeared in the early faculty of the School. Edward M. Freeman came to Minnesota about this time to establish the first department of Plant Pathology in America and to remain as the Dean of the College of Agriculture. In 1900 the Summer School of Forestry was established at Itasca State Park. Today the Itasca Biological Station occupies the same area and offers summer courses and research facilities in all fields of biology.

In the 1880's the Medical School was begun, and a program of University-sponsored licensing of medical practitioners was set up. By 1910 the Medical School was so well known that it placed high in the Flexner Report.

The Botany Department at the turn of the century listed among its faculty such names as A. P. Anderson, who developed the "puffing" of grains; Josephine Tilden, algologist; Otto Rosendahl, taxonomist; Conway MacMillan, ecologist; and F. K. Butters, fern taxonomist.

Shortly after George E. Vincent assumed the presidency in 1911, the Mayo Foundation was brought into the University structure, thereby greatly increasing the research potentialities in human biology. J. B. Johnson was brought to the University during this period in recognition of his work on nerve physiology. In the Department of Agriculture, Vincent brought Roscoe Thatcher and Ross A. Gortner in biochemistry, Frederick Alway in soil chemistry, and H. K. Hayes in agronomy and plant breeding.

The Minnesota Museum of Natural History was founded in the early 1900's; its first director, Thomas S. Roberts, became well known for his two volumes of "The Birds of Minnesota."

The present chairmen of the various departments in the biological sciences include Donald Lawrence (Orville Dahl on leave of absence) in botany; D. W. Minnich in zoology; Elvin Stakman, division of plant pathology; Herbert K. Hayes, agronomy and plant genetics; William H. Alderman, division of horticulture; and Clarence E. Mickel, entomology and economic zoology.

2. HOUSING AND EATING FACILITIES

Dormitory Housing. Four dormitories have been made available for the meetings. Pioneer Hall, capacity 539, has been set aside for family groups and some single men. Centennial Hall, capacity 515, has been reserved for single men. Comstock Hall, capacity 383, has been reserved for single women; and Sanford Hall (if necessary) also for women. Charges will be made at the rate of $3.00 a person for the first night, and $2.00 for each additional night. Portable beds can be provided for children at $1.25 each night when they share the same room as their parents.

Reservations will be accepted until August 27. Cancellations will be accepted until September 1. Reser-

vations may be made in advance to Dr. Clyde M. Christensen, Department of Plant Pathology, University of Minnesota, St. Paul, Minnesota. No reservation will be accepted unless accompanied by a check for the full amount made payable to the University of Minnesota. Dormitory housing application blanks have been mailed to all member and affiliate societies of AIBS participating in the meeting. Others can secure such forms from Dr. Christensen. Reservations will be acknowledged by mail; the assigned dormitory and room will be specified on the receipt. Room keys will be distributed upon presentation of AIBS Registration Badge at the dormitory desk.

Occupancy is permitted any time on Sunday, September 9. Some rooms will be held for late arrivals. Anyone wishing to remain beyond September 12 (Wednesday) must make arrangements for this extension at the time of checking in. Pioneer and Centennial Halls occupy adjacent blocks to the east of the Minneapolis campus (see map, p. 39). They may be reached from the Washington Avenue streetcar by turning off on Harvard Street or Walnut Street. Comstock Hall is situated to the west of Coffman Memorial Union in the same campus block. Services available at Pioneer and Centennial Halls include rooms for pressing clothes; laundromats; a soda fountain serving soft drinks, ice cream, and cigarettes (open noon to 10:00 p.m.); Ping pong and pool tables; two lounges in Pioneer and eight in Centennial open at all hours and available for small coffee parties by arrangement; twenty-four hour telephone service; mail service; and room service.

Hotel Accommodations. The Nicollet Hotel has been reserved as headquarters hotel for the meetings for those wishing to stay in downtown Minneapolis. Reservations must be made directly with the Hotel. It is located at Nicollet Avenue and Washington Avenue, near the railroad station. For transportation to the University, see "Transportation." An AIBS registration and information desk will be found at the Nicollet Hotel, on the mezzanine.

Eating Facilities. Dormitory dining rooms will be closed during the convention period, but the soda fountains will be open in Pioneer and Centennial Halls from 12:00 noon until 10:00 p.m. each day. The main cafeteria, in the basement of the Coffman Memorial Union, accommodates 1500 people at each meal. It will be open on Sunday, 4:00-7:00 p.m.; on Monday through Wednesday, breakfast 7:00-10:30, lunch 11:00-1:30, and dinner 5:15-7:00. Several restaurants and cafés are located at the edge of the campus, both along Washington Avenue and on the north edge of the grounds; many of these will be open Sunday as well as weekdays during the convention period. Downtown Minneapolis offers the visitor many excellent restaurants, several nationally known. Among these are (in addition to the usual hotel dining rooms) Charlie's (701 4th Ave. South), Harry's (74 South 11th Ave.), Donaldson's North Shore Grill (7th Ave. and Nicollet), Dayton's Sky Room (7th Ave. and Nicollet), Murray's (26 South 6th Ave.), and Stouffer's (89 South 7th Ave.).

3. TRANSPORTATION FACILITIES

The Minneapolis campus of the University of Minnesota, where all the scientific meetings will take place and where biologists will be lodged and fed, is situated in the southeastern portion of the city, about two miles from downtown Minneapolis. The campus can be reached by streetcar in about fifteen minutes. To reach Coffman Memorial Union (Main Registration and Information Center on campus) from the Nicollet Hotel, walk two blocks southwest along Nicollet Avenue to Fifth Street. Any streetcar marked "St. Paul" on Fifth Street is traveling in the direction of the campus. The first stop across the Mississippi River Bridge is opposite the Zoology Building and Coffman Memorial Union (on the right). Persons reaching Minneapolis by plane or train should take a taxi directly to the hotel or dormitory.

Part of the University is located on the St. Paul campus which is also known as University Farm; here are located the departments of horticulture, agronomy and plant genetics, plant pathology, and animal breeding. Tours are planned for those interested in visiting this part of the University. A special intercampus trolley connects the two campuses, on a fifteen-minute schedule. The terminus of this streetcar line on the Minneapolis campus is behind Northrop Auditorium (see map, p. 39).

4. REGISTRATION AND INFORMATION CENTERS

It will greatly facilitate keeping records of the Visible Index (located opposite the Biological Sciences Exhibit Hall in the Coffman Memorial Union) *if participants will register as soon as possible after arrival.* Registration desks will be conveniently located at (1) the Nicollet Hotel, (2) the first floor lobby of Coffman Memorial Union, (3) Pioneer Hall, (4) Centennial Hall, and (5) Comstock Hall. These five registration centers will be open at noon on Sunday, September 9.

Upon registering, your convention badge will be issued to you; this is the official receipt for your registration fee ($3.00) and should therefore be worn at all times. The badge is evidence that you have fulfilled your financial obligation to the meetings which have been planned for your enjoyment as well as your professional guidance. Every person attending the meetings is expected to register; this fee covers the cost of printing the program, maintaining the visible index, providing registration and information staffs, equipping rooms with projection equipment and operators, expenses of the Biologists' Smoker and Ladies Entertainment, and AIBS expenses in arranging the meeting. Register *voluntarily!*

Telephones.

(A) *From Campus*

To make outside calls, *dial 9*, wait for dial tone, dial desired number.

(1) Long distance operator 0
(2) Information (Minneapolis) 113
(3) Police ..... MAin 1361
(4) City Ambulance, Emergency ..... MAin 1361
(5) Great Northern Railroad Depot ... ATlantic 0124
(6) Rock Island, Milwaukee & Soo Lines Depot ..... FIllmore 1616
(7) Greyhound Bus Depot ..... ATlantic 0551
(8) Wold Chamberlain Field, Northwest Airlines ..... PArker 6621
Capital Airlines ..... DUpont 9388
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Capital Airlines, 7th and Marquette ..... ATlantic 1611
Mid-continent Airlines, 636 Marquette ..... BRidgeport 7891
Western Airlines, 635 Marquette ..... GEneva 8666
(9) Western Union, 317 2nd Ave So. .. MAin 5111
(10) Nicollet Hotel, Nicollet & Washington ..... ATlantic 3177
(11) Taxicabs, see Yellow Pages of Telephone Directory.

(B) *From Minneapolis* to Campus (Mpls).

Dial *MAin 8158* or *MAin 8177* and ask for:

(a) Campus extension number,
(b) Name of building or dormitory on campus,
(c) Name of person with an office on campus.

(C) *From Minneapolis* to St. Paul Campus.

Dial *NEstor 4616* and ask for building, person, or extension number desired.

(D) *On-Campus Extension Numbers.*

(1) Comstock Hall ..... Dial 0 and ask operator
(2) Pioneer Hall ..... " " " " "
(3) Centennial Hall ..... " " " " "
(4) Coffman Memorial Union.
Information Desk, Main Floor 123
Game Room, Main Floor 139
Cafeteria and Food Services 6236
Barber Shop 222
Beauty Shop 137
(5) Botany Dept. 212
(6) Zoology Dept. 6183
(7) Museum of Natural History 6338
(8) Dight Institute 211
(9) University Garages 6103, 152, 208
(10) University Hospitals .... 80 (outside MAin 8551)

Places of Interest on the Minneapolis Campus.

(1) *Museum of Natural History.* Location: Church Street and University Ave. Hours 9:00 a.m. to 5:00 p.m. Its exhibits are similar in design to those in the Museum of Natural History in New York; many of its units were painted by Francis L. Jacques. Director: Dr. W. J. Breckenridge.

(2) *Botany Dept, Herbarium.* Location: Botany Building, Church Street. Present curator: Dr. G. Ownbey. Total of 424,288 specimens.

(3) *Dight Institute for Human Genetics.* Founded by Dr. Charles Dight in 1938, it is devoted to research and counseling in human genetics. Location: Zoology Bldg, Room 12. Director: Dr. Sheldon C. Reed.

(4) *Synoptic Room, Zoology Dept.* Situated on the first floor of the Zoology Bldg. Survey of the animal kingdom from protozoa to primates.

(5) *Cancer Detection Centre.* Location: Church Street beside the Botany Building. Concerned with research in methods of detecting cancer in its early stages.

(6) *University Art Gallery.* Situated in Northrop Auditorium. The gallery will *NOT* be open during the first two weeks of September.

(7) *Radio Station KUOM.* The University's radio station is located in Eddy Hall, first floor. Visitors should call the station (extension 6322) for information about appropriate visiting hours.

Other Places of Interest.

(1) *Itasca Biological Station.* Located in Itasca State Park, approximately 250 miles north of Minneapolis, the station offers summer courses in Forestry and many branches of field Botany and Zoology. Director: Dr. T. Schantz-Hansen.

(2) *Hormel Institute.* In Austin, Minnesota, this research centre is concerned with making better uses of plant and animal food products. It is administered under the Graduate School of the University.

(3) *Research Centre, Rosemount.* Located at Rosemount, close to the Twin Cities, this unit is a centre for medical and biological research, e.g., polio, mouse cancer.

(4) *Forestry Experiment Station, Cloquet.*

(5) *Fruit Breeding Farm, Excelsior.* See note under "Tours" or sections on activities of Horticulturists.

(6) *Mayo Foundation, Rochester.* Rochester lies about 90 miles southwest of Minneapolis and may be reached by bus, train, or plane. Further information may be had at the Information Desk.

(7) *Minnehaha Falls and Park.* Situated on the Mississippi at the southern edge of the city, this park with its historical falls is a splendid picnic area.

(8) *Minneapolis Lakes.* Minneapolis is famous for its many lakes within the city limits. Excellent (patrolled) bathing beaches are located on all the lakes; canoes can be rented on Lake Calhoun for trips through the chain of lakes. A short distance from the Cities are Lake Minnetonka and White Bear Lake both large bodies of water where sailing and fishing may be enjoyed.

(9) *State Capitol.* The Capitol building is in St. Paul on University Ave. and Wabasha. It can be reached from the Minneapolis campus by half an hour's drive along University Ave.

(10) *Minnesota Historical Society.* This Museum building is adjacent to the State Capitol on Capitol Hill. For visiting hours, please consult the Information Desk in Coffman Union.

(11) *Minnesota Science Museum.* This is another Museum near the State Capitol in St. Paul.

(12) *Walker Art Centre.* Location: 1710 Lyndale Ave. So. just off Hennepin Ave. in Minneapolis. Special attraction: splendid jade collection. Usual exhibits: modern art.

(13) *Minneapolis Art Institute.* Location: 201 East 24th, Minneapolis. For exhibits current in September, please consult Information desk in Coffman Union.

(14) *Swedish Art Institute.* Location: 2601 Oakland Ave., Minneapolis. Swedish-American art museum.

II. GENERAL PROGRAM

1. A. I. B. S. MEETINGS

THE American Institute of Biological Sciences was established by ratification of its constitution on February 20, 1948, at Washington, D. C. Its purposes are in general the advancement of the biological sciences and their applications to human welfare. To serve these purposes AIBS has certain specific aims which include (1) assistance to societies and other organizations in such matters of common concern as can be dealt with most effectively by united action, (2) promotion of unity and effectiveness of effort among all those who are devoting themselves to the biological sciences and their application by research, by teaching, or by study; and (3) fostering the relation of the biological sciences to other sciences, to the arts and industries, to the government, and to the Department of Defense.

As of July 1, 1951, AIBS consists of 15 member societies (whose representatives act as Directors of the Governing Board), five affiliate societies, and nine associates from industry and business. The names of these groups can be secured from the AIBS Informational Booklet. Individual non-duplicated membership in the 20 AIBS societies is estimated at 16,000.

Chairman, FRANK P. CULLINAN, Bureau of Plant Industry, USDA, Beltsville, Md.

Vice-Chairman, WALLACE O. FENN, University of Rochester, Rochester, N. Y.

Executive Secretary, CLARENCE J. HYLANDER, 2101 Constitution Avenue, Washington, D. C.

Monday Afternoon, September 10

12:30 **Luncheon Meeting of the Governing Board, *Coffman Memorial Union, Room 305.***

Monday Evening, September 10

8:30 **Meeting for All Participating Societies, *Northrop Auditorium.***

Introduction: FRANK P. CULLINAN, Chairman of the Governing Board, American Institute of Biological Sciences.

Welcome to the Campus: JAMES L. MORRILL, President of the University of Minnesota.

Address: Federal Support of Fundamental Research in the Biological Sciences. ALAN WATERMAN, Director of the National Science Foundation.

Tuesday Afternoon, September 11

2:00 **Symposium: The Economics of Journal Publication, *Coffman Memorial Union, Room 320.*** A. J. RIKER, Chairman AIBS Publications Committee, Presiding.

The Editor and Economies of Publication. HELEN HART, University of Minnesota, and editor, Phytopathology.

The Business Manager and Economies of Publication. RONALD BAMFORD, University of Maryland and Business Manager, American Journal of Botany.

Economies Through Illustration Planning. CLARENCE J. HYLANDER, editor, THE AIBS BULLETIN, Washington, D. C.

Economies in Letter-press Printing. JOHN FERGUSON, president, Monumental Printing Company, Baltimore, Md.

Economies in Offset Printing, JAQUES CATTELL, president, Science Press, Lancaster, Pa.

Economies Through Consolidation of Scientific Journals. WILLARD E. BROWN, Sales Representative, Judd and Detweiler, Inc., Washington, D. C.

Wednesday Afternoon, September 12

2:00 **Forum: Placement Services for Biologists, *Coffman Memorial Union, Room 320.***

An open discussion on integration of existing and possible future placement activities which might be undertaken by biological societies and AIBS. PAUL VOTH, University of Chicago, Chicago, Ill., and CLARENCE J. HYLANDER, Executive Secretary AIBS, leaders.

Wednesday Evening, September 12

8:30-11:00 **Biologists' Smoker, *Coffman Memorial Union,*** Terrace Room and Biological Sciences Exhibit Hall.

2. TOURS, TRIPS, AND DEMONSTRATIONS

American Society of Bryologists. Before the Minneapolis meeting the group will meet in Duluth *Thursday evening, September 6,* and remain there overnight. The trip will start the next morning, *September 7,* at 8:00 a.m. for the North Shore of Lake Superior and spend that night at Grand Portage Indian Reservation Lodge, arriving at 6:00 p.m. The following morning, *September 8,* the group will drive to Hat Point and take a launch from there to Big Suzie Island, Sailboat Island, Long Island, Porcupine, and Belle Rose Islands, all lying offshore from one to three miles. Dinner will be in the dining room at Grand Portage Lodge. *September 9, Sunday,* the

group will visit the marl bog at Grand Portage and then drive to Duluth and Minneapolis, stopping at Kerrick, Minnesota, to see the fine acid peat bog there. Warm clothing is suggested. Reservations are to be made by RUDOLPH M. SCHUSTER, leader, University of Mississippi, Oxford, Miss.

American Society for Horticultural Science. *Wednesday morning, September 12,* at 9:00 a.m., there will be a tour by chartered bus of University of Minnesota vegetable crop experimental plots and Northrup King & Company, dealers in seeds, with noon lunch provided. Return to Coffman Memorial Union at 1:00 p.m. ROBERT E. NYLUND, Division of Horticulture, University of Minnesota, in charge. *Thursday, September 13,* there will be two concurrent all-day trips. Trip A leaves at 9:00 a.m. by bus to Le Sueur, Minnesota, to observe canning crop experimental work, courtesy Green Giant Company; return to Coffman Memorial Union at 5:00 p.m. P. E. BENSON, Green Giant Company, in charge. Trip B leaves Coffman Memorial Union at 9:00 a.m. Tour by chartered bus of University of Minnesota Fruit Breeding Farm, Excelsior, Minnesota; return to Union building by 4:30 p.m. A. N. WILCOX, Division of Horticulture, University of Minnesota, St. Paul, in charge.

American Society of Plant Taxonomists. Before the Minneapolis meeting, the trip will begin at Duluth on *September 7* and end in Minneapolis on *September 9.* The first day will be spent along the north shore of Lake Superior, the second day in the interior as far north as the Kawishiwi River, and the third day between Duluth and Minneapolis. Persons wishing to participate should make reservations with GERALD B. OWNBEY, local field trip chairman, Department of Botany, University of Minnesota, Minneapolis. The following information should be provided with request for reservation: number of participants, kind of accommodation desired (hotel, tourist court, etc.), whether or not own transportation will be furnished, and whether or not space for transportation of others can be made available.

Ecological Society of America. Before the Minneapolis meetings, on *September 7, 8, and 9,* at the University of Minnesota Biological Station at Itasca State Park, a field program will be provided; for details, see program section of the Ecological Society, p. 48. Registration will be at the Biological Station at 1:00 p.m., Friday, September 7. WILLIAM MARSHALL, University of Minnesota, St. Paul, is in charge. After the meetings, on Thursday, *September 13,* there will be an all-day field program in the Twin Cities area. See program section of the Ecological Society, p. 52. WILLIAM S. COOPER, University of Minnesota, in charge.

Open Houses and Exhibits. On *Tuesday afternoon, September 11,* 2:30-6:00 p.m., various departments and divisions of the University have planned open houses which will occur simultaneously. The Division of Agronomy and Plant Genetics, Department of Agriculture, Agronomy and Plant Genetics Building, on the St. Paul campus (see p. 8 under transportation facilities) will be open to visitors, and the staff will be at hand to explain the research program. Opportunity will be provided to examine the corn field experiments. The Division of Animal Husbandry, Department of Agriculture, on the St. Paul campus, in Peters Hall, will be open to visitors and the research program will be explained. The Department of Botany, Botany Building, on the Minneapolis campus, will likewise be open to visitors with exhibits by various sections of the department. Staff will be on hand for discussion of projects, and refreshments will be served in the greenhouse garden south of the Botany Building. Access to the greenhouse and garden is via tunnel stairs from sub-basement of the Botany Building and outdoor stairs south of the Student Service Building. Cards will be provided to bring visitors to the upper level, following their visit to the greenhouse and garden. The Division of Forestry, Department of Agriculture, and the Lake States Forest Experiment Station (St. Paul campus, Green Hall) will be open to visitors and staff available to discuss the research program. The Division of Plant Pathology, Department of Agriculture (St. Paul campus, Plant Pathology Building), will also be open to visitors and staff will be present to discuss the research program. The Genetics Society of America will have a demonstration in the Zoology laboratory (Zoology Building, Minneapolis campus).

Open House at the Minnesota Museum of Natural History, 8:00-10:00 p.m. on *Tuesday evening, September 11,* will provide an opportunity to visit the excellent habitat groups and displays at this modern museum. The **Dight Institute of Human Genetics** (Zoology Building, Room 10, on the Minneapolis campus) will be open to visitors on Wednesday afternoon, 2:00-5:00 p.m. There will be no formal exhibits, but staff members will be on hand to discuss the research program.

The **Biological Sciences Exhibit Hall** (see p. 59 for additional information) will have a special open house evening, 8:00-11:00 p.m., on Wednesday, September 12, to coincide with the Biologists' Smoker held in Coffman Memorial Union.

3. BANQUETS AND SPECIAL MEALS

Monday, September 10.

Breakfast: 8:00 a.m., *American Bryological Society*, Coffman Memorial Union.

Luncheon: 12:30 p.m., *American Institute of Biological Sciences*, Governing Board, Coffman Memorial Union, Room 305.

Luncheon: 12:30 p.m., *Society of General Physiologists*, Coffman Memorial Union.

Banquet: 6:00 p.m., *Ecological Society of America*, Coffman Memorial Union, Junior Ballroom. Donald B. Lawrence in charge.

Tuesday, September 11.

Luncheon: 12:30 p.m., *Genetics Society of America*, Coffman Memorial Union, Junior Ballroom, Sheldon B. Reed in charge.

Luncheon: 12:30 p.m., *Ecologists* in honor of Dr. Cooper. Coffman Memorial Union, Room 351. Donald B. Lawrence in charge.

Banquet: 6:30 p.m., *American Society for Horticultural Science*, Coffman Memorial Union, Junior Ballroom. A. N. Wilcox in charge.

Banquet: 6:30 p.m., *American Society of Plant Physiologists*, Nicollet Hotel. Allan A. Brown in charge.

Banquet: 6:30 p.m., *American Society of Plant Taxonomists*, Nicollet Hotel. Ernst Abbe in charge (acting for Gerald Ownbey).

Wednesday, September 12.

Breakfast: 8:00 a.m., *Corn Geneticists*, Coffman Memorial Union. Charles R. Burnham in charge.

Luncheon: 12:30 p.m., *Sigma Delta Epsilon*, Coffman Memorial Union, Junior Ballroom. Mrs. Ileen Stewart in charge.

Banquet: 6:30 p.m., *Botanical Society of America*, Coffman Memorial Union, Junior Ballroom. T. Kommedahl in charge (acting for Elvin C. Stakman).

4. THE BIOLOGISTS' SMOKER

A tradition of the meetings of the biological societies has been the annual event of the "Biologists' Smoker" where one can meet all of his colleagues and their guests in the informality of a social gathering. Refreshments and cigarettes will be available both under the mezzanine adjacent to the Biological Sciences Exhibit in the ballroom of the Coffman Memorial Union, and, weather permitting, on the terrace and in the terrace room adjacent to the main lounge. **Time: 8:30-11:00, Wednesday evening, September 12.**

5. LADIES' ENTERTAINMENT

A program has been arranged by Dr. Helen Hart for the ladies who do not wish to attend the scientific meetings of the societies. Guests may register for the tours at the various registration desks, but all tours start from the north portico of the Coffman Memorial Union. Members of the Faculty Women's Club will provide transportation.

Monday, September 10, 1:30-5:00 p.m. Boulevard drive and tour of the Minneapolis lakes, Lyndale Rose Gardens, and Eloise Butler Wildflower Garden. A brief stop in Theodore Wirth Park will give opportunity for afternoon refreshments at the Chalet.

Tuesday, September 11, 9:30-12:00 a.m. Tour through the five experimental and testing kitchens of Betty Crocker Kitchens, General Mills, Minneapolis, followed by a color movie of a cake demonstration. In the afternoon **(2:30-6:00 p.m.)** various of the tours described in the Open House section (see p. 11) may be of interest. At the Minnesota Museum of Natural History, **8:00-10:00 p.m.**, the Open House has been planned to include the visiting ladies and other guests.

Wednesday, September 12, 9:30-12:00 a.m. A drive has been planned along the Mississippi Palisades, past Minnehaha Falls, through historic Fort Snelling and Mendota (Minnesota's first capital) to St. Paul and the State Capitol and return along University Avenue. At *noon* there will be a luncheon for women in science (this page) sponsored by the Xi Chapter of Sigma Delta Epsilon, Graduate Women's Scientific Fraternity (see elsewhere this page).

6. AIBS PLACEMENT SERVICE

A representative of the AIBS Placement Service will be available at the AIBS campus office in the Terrace Room of the Coffman Memorial Union from **Monday morning, September 10** through **Wednesday afternoon, September 12,** to arrange meetings between candidates for positions and employers desiring new staff members. Registration for candidates is free to individuals who are members of AIBS member societies. A registration fee of $3.00 is charged members of AIBS affiliate societies and of $5.00 to all non-AIBS members. Lists of previous registrants, as noted in the July issue of THE AIBS BULLETIN, will be available for representatives of institutions and organizations wishing to add biologists to their staffs. Comfortable facilities will be provided for private interviews between applicants and employers.

III. THE SOCIETY PROGRAMS

1. THE AMERICAN BRYOLOGICAL SOCIETY

The American Bryological Society was organized at Plymouth, New Hampshire, in 1898 as the Sullivant Moss Chapter of the Agassiz Association. The original name honored William Starling Sullivant of Columbus, Ohio, pioneer student of American mosses and brother of Joseph Sullivant, member of the first Board of Trustees of Ohio State University. The name of the society was changed in 1908 to the Sullivant Moss Society, and to the present form in 1949. The objectives of the society are: (1) to promote the study of mosses, liverworts, and lichens, (2) to aid in the exchange of specimens, and (3) to build up reference herbaria of these plants. Total membership, 391.

The Bryologist, official organ of the society, was established in 1898.

President, LEWIS E. ANDERSON, Duke University, Durham, N. C.

Secretary, WINONA H. WELCH, DePauw University, Greencastle, Ind.

Room 1, *Botany Building*, has been reserved as study room for the use of the American Bryological Society.

MONDAY MORNING, SEPTEMBER 10

8:00 **Breakfast Meeting.** ***Coffman Memorial Union.***

9:00 **Annual Meeting.** ***Coffman Memorial Union.***

SESSION 1—*Ford Hall, Room 285*

10:00 *1.* HOLLIGER, HERBERT H., Huron, Ohio. New Photographs of Mosses in Color. (2 x 2, illustrated.)

10:20 *2.* SCHUSTER, RUDOLPH M., University of Mississippi, University, Miss. *Cryptocolea*, a New North American Genus of Hepaticae.

10:40 *3.* WHEELER, LOUIS C., 55 E. Pine Street, Altadena, Calif. Habitats of Some California Hepaticae. (2 x 2, illustrated.)

10:55 *4.* KRAJINA, VLADIMIR, University of British Columbia, Vancouver, British Columbia. Bryophytes and Lichens in Douglas Fir Forest on Vancouver Island. (3¼ x 4, illustrated.)

11:15 *5.* STEERE, WILLIAM C., Stanford University, Stanford, Calif. On the Distribution of Arctic Mosses. (2 x 2, illustrated.)

MONDAY AFTERNOON, SEPTEMBER 10

SESSION 2—*Ford Hall, Room 285*

2:00 *6.* SCHUSTER, RUDOLPH M., University of Mississippi, University, Miss. The Foray, 1951.

2:15 *7.* ANDERSON, LEWIS E., Duke University, Durham, N. C. Some Additions to the Moss Flora of the Southern Appalachians. (2 x 2, illustrated.)

2:30 *8.* GIER, L. J., William Jewell College, Liberty, Mo. Missouri Bryophytes. (2 x 2, illustrated.)

2:40 *9.* KUCYNIAK, JAMES, Montreal Botanic Garden, Montreal, Quebec. *Timmia austriacea* in Quebec.

2:50 *10.* SAYRE, GENEVA, Russell Sage College, Troy, N. Y. Early American Bryologists.

3:10 *11.* THOMPSON, JOHN W., University of Wisconsin, Madison, Wis. Collecting Lichens West of Hudson Bay. (2 x 2, illustrated.)

3:30 *12.* HALE, MASON E., University of Wisconsin, Madison, Wis. Distribution of the Lichen *Rinodina oreina* in North America. (2 x 2, illustrated.)

NOTE—A study room with microscopes has been made available for the use of the American Bryological Society in Room 1, Botany Building.

2. THE AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE

The American Society for Horticultural Science was organized September 9, 1903, at Boston, Massachusetts, on the occasion of the twenty-eighth biennial session of the American Pomological Society. The objectives of the society are to further horticultural investigations and teaching and to promote the science of horticulture. The field includes pomology, olericulture, floriculture, and ornamental horticulture; recently a new section for processing was established within the framework of the society. Total membership, 1438.

President, A. F. YEAGER, University of New Hampshire, Durham, N. H.

Vice-President, KENNETH POST, Cornell University, Ithaca, N. Y.

Sectional Chairmen:

Pomology, DAMON BOYNTON, Cornell University, Ithaca, N. Y.
Vegetable Crops, F. S. JAMISON, University of Florida, Gainesville, Fla.
Floriculture and Ornamental Horticulture, V. T. STOUTEMYER, University of California, Davis, Calif.
Processing, A. KRAMER, University of Maryland, College Park, Md.

Secretary-Treasurer, FREEMAN S. HOWLETT, Ohio Agricultural Experiment Station, Wooster, Ohio.

Representative on the Governing Board of A.I.B.S., FRANK P. CULLINAN, Plant Industry Station, Beltsville, Md.

Conference Room No. 344 at the ***Coffman Memorial Union*** has been reserved for the entire convention period for use of A.S.H.S. council and committee meetings.

Program of the Forty-eighth Annual Meeting

MONDAY MORNING, SEPTEMBER 10

Horticultural Crops Breeding, *Chemistry Auditorium*

ALBERT F. YEAGER, University of New Hampshire, Durham, N. H., Chairman.

9:30 *13.* JOHNSON, B. LENNART, University of California, Los Angeles, Calif. The Effect of Pollination Technique, Incompatibility and Species Differences on the Percentage of Seed Set in Marigolds.

9:40 *14.* HANEY, W. J., Department of Horticulture, Michigan State College, East Lansing, Mich. Color Inheritance of the Greenhouse Snapdragon.

9:55 *15.* HANEY, W. J., Department of Horticulture, Michigan State College, East Lansing, Mich. A Gene Affecting Snapdragon Shattering.

10:00 *16.* ASEN, SAM, and RUSSELL E. LARSON, Pennsylvania State College, State College, Pa. Artificial Culturing of Rose Embryos. (Illustrated, 2 x 2 and 3¼ x 4)

10:10 *17.* SLATE, G. L., and L. G. KLEIN, New York State Agricultural Experiment Station, Geneva, N. Y. Black Raspberry Breeding.

10:20 *18.* HANSON, KENNETH W., and ARTHUR N. WILCOX, University of Minnesota, St. Paul, Minn. Certain Phases of Strawberry Breeding in Relation to the Ascorbic Acid Content of the Fruit.

10:30 *19.* WILCOX, ARTHUR N., University of Minnesota, St. Paul, Minn. Some Evidence on the Nature of June Yellows or Variegation of the Strawberry. (Illustrated, 2 x 2)

10:40 *20.* BISHOP, CHARLES J., Dominion Experimental Station, Kentville, Nova Scotia. The Inheritance of Tree and Fruit Characters in Natural Polyploid Apple Seedlings.

10:50 *21.* BISHOP, CHARLES J., Dominion Experimental Station, Kentville, Nova Scotia. The Value of Red Color Sports of Spy and Ben Davis for Improving the Fruit Color of Apple Seedlings. .

11:00 *22.* ALDERMAN, WILLIAM H., and THEODORE S. WEIR, University of Minnesota, St. Paul, Minn. Pollination Studies With Plums.

11:10 *23.* HUTCHINS, ARTHUR E., and VICTOR B. YOUNGER, University of Minnesota, St. Paul, Minn. Maternal Inheritance of Color Variation (Chimaera) in Squash (*Cucurbita maxima.*) (Illustrated, 2 x 2)

11:20 *24.* SCHULTZ, J. H., and EUNICE KELLY, Agricultural Experiment Station, State College Station, Fargo, N. D. A Study of Ascorbic Acid Content and Fruit Size in Tomatoes Segregating for Those Characters. (Illustrated, 2 x 2)

11:30 *25.* GUILBEAU, STEPHEN, JOHN J. MIKELL, and JULIAN C. MILLER, Louisiana Agricultural Experiment Station, Baton Rouge, La. A Study of the Inheritance of Fusarium Wilt Resistance in Sweet Potatoes. (Illustrated, 2 x 2)

11:40 *26.* HUELSEN, W. A., University of Illinois, Urbana, Ill. A Pedigree System for Plant Breeders.

Twenty Seventh Annual Meeting of the National Joint Committee on Fertilizer Application, Held Jointly with the American Society for Horticultural Science. *Vincent Hall, Room 4.*

Program Chairman—R. L. CAROLUS

9:30 **New Concepts and Recent Practices in the Use and Application of Fertilizer to Deciduous and Small Fruits.**

Committee Report: A. L. KENWORTHY and Committee

10:00 **Future of Leaf Analysis as a Diagnostic Tool for Determination of Fertilizer Requirement of Fruit Crops.** W. P. JUDKINS, Virginia, Panel Chairman.

A. F. CAMP, Florida; A. L. KENWORTHY, Michigan; O. LILLELAND, California; M. E. MCCULLUM, California; G. P. POTTER, Louisiana; N. J. SHAULIS, New York; E. K. WALRATH, Massachusetts.

10:45 **Use of Fertilizer Solutions in Leaf Feeding.** N. F. CHILDERS, N. J., Chairman.

DAMON BOYNTON, New York; A. F. CAMP, Florida; L. L. DANIELSON, Virginia; T. A. MERRILL, Washington; E. R. PARKER, California; S. H. WITTWER, Michigan.

11:30 **Recent Fertilizer Machinery Developments Particularly for Horticultural Crops.** G. A. CUMINGS, Agricultural Engineering, U.S.D.A.

MONDAY AFTERNOON, SEPTEMBER 10

Continuation of the Combined Meeting of the National Joint Committee on Fertilizer Application and the American Society for Horticultural Science. *Vincent Hall, Room 4.*

1:30 **The Importance of Some Easily Measurable Factors of Soil Fertility and Land Management in the Production of Sweet Corn.** G. R. MUHR, Green Giant Company, LeSueur, Minn.

2:00 **New Concepts and Recent Practices in the Use and Application of Fertilizer to Vegetable Crops.**

Committee Report: J. B. HESTER and Panel. M. T. VITTUM, New York; E. R. PURVIS, New Jersey; M. L. ODLAND, Pennsylvania; E. P. BRASHER, Delaware; V. A. TIEDJENS, Virginia.

2:30 **Joint Symposium of the American Society for Horticultural Science with the American Society of Plant Physiologists, *Minnesota Museum of Natural History, Auditorium.***

Why Plants Grow Where They Do

For details see the program of the Physiological Section of the Botanical Society of America, p. 31.

4:00 **Business Session** of the American Society for Horticultural Science. ***Chemistry Auditorium.***

Report of the Executive Committee
Report of the Secretary-Treasurer
Report of the Editor of the Proceedings
Report of the Standing Committees
Report of the Special Committees
Other Old Business
New Business
Election of Officers

MONDAY EVENING, SEPTEMBER 10

8:30 **General Meeting for All Participating Societies, American Institute of Bological Sciences. *Northrop Auditorium.***

Federal Support of Fundamental Research in the Biological Sciences.

Address by ALAN WATERMAN, Director, National Science Foundation.

TUESDAY MORNING, SEPTEMBER 11

Section I, Orchard Operations, *Murphy Auditorium.*

DAMON BOYNTON, Cornell University, Ithaca, N. Y., chairman

9:00 *27.* FILINGER, G. A., and C. C. DOLL, Kansas Experiment Station, Manhattan, Kans. Anatomical Studies of Graft Unions. (Illustrated, 2 x 2)

9:10 *28.* ROBERTS, R. H., University of Wisconsin, Madison 6, Wis. A Method of Pruning Golden Delicious to Secure Good Apple Size. (Illustrated, 2 x 2)

9:20 *29.* HAVIS, LEON, Plant Industry Station, Beltsville, Md. Pruning Peach Trees at Different Periods in the Spring. (Illustrated, 3¼ x 4)

9:35 *30.* TUKEY, LOREN D., and OSCAR WILLIAMS, Pennsylvania State College, State College, Pa. A Versatile Sprayer for Experimental Purposes. (Illustrated, 2 x 2)

9:40 *31.* MITCHELL, A. E., H. A. CARDINELL, EUNICE J. HEINEN, and ERWIN J. BENNE, Michigan State College, East Lansing, Mich. The Distribution of Spray Chemicals Applied in Concentrated Form to Large, Bearing Apples Pruned at Different Degrees of Severity. (Illustrated)

9:50 *32.* NORTON, ROBERT A., and NORMAN F. CHILDERS, New Jersey Agricultural Experiment Station, Rutgers University, New Brunswick, N. J. The Relative Value of Urea Foliage Sprays on the Peach. (Illustrated, 2 x 2)

10:00 *33.* CAIN, JOHN C., New York Agricultural Experiment Station, Geneva, N. Y., and D. BOYNTON, Cornell University, Ithaca, N. Y. Fertilization, Pruning, and Mottle Leaf Disease in Relation to the Behavior of Italian Prunes in Western New York. (Illustrated, 3¼ x 4)

10:15 *34.* TOENJES, W., and A. L. KENWORTHY, Michigan State College, East Lansing, Mich. Soil Moisture Conditions in Michigan Orchards in Relation to Soil and Orchard Management Practices.

10:25 *35.* GOODMAN, R. N., University of Missouri, Columbia, Mo. Soil Moisture and Infiltration as Affected by Mulches. (Illustrated, 2 x 2)

10:30 *36.* MENZIES, JOHN A., WILLIAM H. ALDERMAN, and ARTHUR N. WILCOX, University of Minnesota, St. Paul, Minn. A Study of Growth Rates of 27 Varieties of Apples During the First Six Years in the Orchard.

10:40 *37.* COOPER, WILLIAM C., and BERT S. GORTON, U. S. Department of Agriculture, Texas Agricultural Experiment Station, Weslaco, Texas. Specificity of Rootstocks on Conditioning Chloride Accumulation in Citrus. (Illustrated, 2 x 2)

11:00 *38.* WALLACE, A., C. J. NAUDE, and R. T. MUELLER, University of California, Los Angeles, Calif. The Nature of the Rootstock-Scion Influence on the Inorganic Composition of Citrus. (Illustrated, 2 x2)

Section II, Vegetable Crops, *Chemistry Auditorium.*

F. S. JAMISON, University of Florida, Gainesville, Fla., chairman

9:00 *39.* LUTZ, J. M., U. S. Department of Agriculture, East Grand Forks, Minn. Influence of Length and Temperature of Curing on Keeping Quality of Puerto Rico Sweet Potatoes. (Illustrated, 3¼ x 4)

9:10 *40.* DALLYN, S. L., and JULIAN C. MILLER, Louisiana Agricultural Experiment Station, Baton Rouge, La. Influence of Various Physical Treatments on the Sugar Content of Sweet Potatoes. (Illustrated, 2 x 2)

9:20 *41.* WITTWER, S. H., and W. S. LUNDAHL, Michigan State College, East Lansing, Mich. Autoradiography as an Aid in Determining the Absorption and Utilization of Foliar Applied Nutrients. (Illustrated, 2 x 2 and 3¼ x 4)

9:30 *42.* MAYBERRY, B. D., S. H. WITTWER, and H. M. SELL, Michigan State College, East Lansing, Mich. The Efficiency of Utilization of Phosphorus Applied to the Leaves of Plants. (Illustrated, 2 x 2 and 3¼ x 4)

9:40 *43.* KLINKER, J. EDWARD, and E. M. EMMERT, Department of Horticulture, University of Kentucky, Lexington, Ky. Effect of Foliar Applications of Sucrose and Urea on Tomato Yields and Quality.

9:50 *44.* MONTELARO, JAMES, and C. B. HALL, Florida Agricultural Experiment Station, Gainesville, Fla. Some Preliminary Studies on the Nitrogen Nutrition of Tomatoes with Foliar Sprays.

10:00 *45.* SMITH, PAUL G., and FRANK W. ZINK, University of California, Davis, Calif. Effect of Sucrose Foliage Spray on Tomato Transplants.

10:10 *46.* REEVE, ELDROW, and W. A. SCHMIDT, Campbell Soup Company, West Chicago, Ill. Influence of Plant Spacing on Canning Tomato Yields. (Illustrated, 2 x 2)

10:20 *47.* REEVE, ELDROW, West Chicago, Ill. Influence of Vitamin Supplements on Mushroom Yields. (Illustrated)

10:40 *48.* SIMS, B. L., and W. H. GABELMAN, University of Wisconsin, Madison, Wis. Limitations in the Use of Phosphorus in Vegetable Fertilization.

10:50 *49.* LAMBETH, VICTOR N., and R. A. SCHROEDER, University of Missouri, Columbia, Mo. The Degree of Base Saturation as a Guide for Fertilizer Recommendations for Vegetable Crops. (Illustrated, 3¼ x 4)

11:05 *50.* PATERSON, D. R., and S. H. WITTWER, Michigan State College, East Lansing, Mich. Effects of Preharvest Foliage Applications of Maleic Hydrazide on Sprout Inhibition of Potatoes. (Illustrated, 2 x 2 and 3¼ x 4)

11:15 *51.* LEARNER, E. N., and S. H. WITTWER, Michigan State College, East Lansing, Mich. Some Effects of "Hardening" Tomato Plants by Chemical Treatment as Compared with Temperature and Moisture Control. (Illustrated, 2 x 2 and 3¼ x 4)

11:25 *52.* WARE, L. M., and W. A. JOHNSON, Alabama Agricultural Experiment Station, Auburn, Ala. Residual Effects of Perennial Legumes on the Yield of Vegetable Crops.

Section III, Floriculture—General, *Vincent Hall, Room 4.*

V. T. STOUTEMYER, University of California, Davis, Calif., chairman

9:00 *53.* DAVIS, WALTER E., Ohio Agricultural Experiment Station, Wooster, Ohio. Gardenia Flower Bud Initiation.

9:10 *54.* FURUTA, TOKUJI, Ohio Agricultural Experiment Station, Wooster, Ohio. A Preliminary Report on the Summer Crown Bud Formation of Two Chrysanthemum Varieties.

9:20 *55.* FURUTA, TOKUJI, and D. C. KIPLINGER, Ohio Agricultural Experiment Station, Wooster, Ohio. Chronological Age, a Factor Influencing the Spray Formation of Chrysanthemums.

9:30 *56.* SIEGELMAN, HAROLD W., U. S. Department of Agriculture, P. O. Box 99, Wenatchee, Wash. The Respiration of Rose and Gardenia Flowers. (Illustrated, 3¼ x 4)

9:45 *57.* ANDREWS, PAUL S., and DONALD P. WATSON, Michigan State College, East Lansing, Mich. An Anatomical Study of the Development of the Flower Head of *Chrysanthemum morifolium.* (Illustrated, 2 x 2 and 3¼ x 4)

9:55 *58.* CARPENTER, WILLIAM J., and DONALD P. WATSON, Michigan State College, East Lansing, Mich. The Effect of Corn Cob Soil Moistures on the Growth and Flowering of Briarcliff Roses. (Illustrated, 2 x 2)

10:05 *59.* STRUCKMEYER, B. ESTHER, and G. E. BECK, University of Wisconsin, Madison, Wis. The Effect of Maleic Hydrazide on the Growth and Flowering of Croft Easter Lilies. (Illustrated, 2 x 2)

10:20 *60.* STUART, NEIL W., Plant Industry Station, USDA, Beltsville, Maryland, WILLIAM SKOU and D. C. KIPLINGER, Ohio State University, Columbus, Ohio. Further Studies on Causes and Control of Leaf Scorch in the Croft Easter Lily. (Illustrated, 2 x 2)

10:30 *61.* STINSON, R. F., and C. G. KEYES, University of Connecticut, Storrs, Conn. *Gerberia Jamesonii:* Growth and Flower Production at Several pH Levels. (Illustrated, 2 x 2)

10:45 *62.* STINSON, R. F., and C. G. KEYES, University of Connecticut, Storrs, Conn. Survival of Fall and Spring Sown Sweet Pea Seed When Germinated Before Planting. (Illustrated, 2 x 2)

11:00 *63.* STINSON, R. F., and C. G. KEYES, University of Connecticut, Storrs, Conn. Copper and Zinc Naphthenate as a Treatment to Control Growth of Algae on Florist Clay Pots. (Illustrated, 2 x 2)

11:15 *64.* HOLLEY, W. D., and ROGER FARMER, Colorado A&M College, Fort Collins, Colo. Mulching Studies on the Greenhouse Carnation.

11:25 *65.* CHADWICK, L. C., Ohio Agricultural Experiment Station, Wooster, Ohio. Propagation of *Mahonia aquifolium* and *Hydrangea petiolaris* by Stem Cuttings. (Illustrated, 2 x 2)

11:35 *66.* SMITH, B. C., Ohio Agricultural Experiment Station, Wooster, Ohio. Techniques Used for Rapid Germination of Seed of the Genus *Cotoneaster.* (Illustrated, 2 x 2)

TUESDAY AFTERNOON, SEPTEMBER 11

Section I, Tree Fruits Nutrition, *Chemistry Auditorium.*

DAMON BOYNTON, Cornell University, Ithaca, N. Y., chairman

1:30 *67.* WALRATH, E. K., and RODGER C. SMITH, Eastern States Farmers' Exchange, West Springfield, Mass. Survey of Forty Apple Orchards Using Leaf and Soil Analysis Techniques.

1:45 *68.* TICKNOR, R. L., H. B. TUKEY, and A. E. MITCHELL, Michigan State College, East Lansing, Mich. The Entry of Mineral Nutrients into Leaves and Branches of Apple, Cherry, and Peach Trees as Indicated by Radioactive Isotopes. (Illustrated)

1:55 *69.* BEATTIE, JAMES M., Ohio Agricultural Experiment Station, Wooster, Ohio. Studies on the Boron Requirement of Young Apple Trees Grown in Sand Culture. (Illustrated, 2 x 2)

2:10 *70.* BOYNTON, DAMON, R. M. SMOCK, and L. C. ANDERSON, Cornell University, Ithaca, N. Y. Short Term Effects of Non-leguminous Hay Mulch and Nitrogen Fertilizer Separately and in Varying Combinations on the Behavior of McIntosh Apple Trees. (Illustrated, 3¼ x 4)

2:25 *71.* WEEKS, W. D., F. W. SOUTHWICK, MACK DRAKE, and J. E. STECKEL, Massachusetts Agricultural Experiment Station, Amherst, Mass. The Effect of Different Rates and Sources of Nitrogen on the Mineral Composition of McIntosh Foliage and Fruit Color. (Illustrated, 3¼ x 4 and 2 x 2)

2:35 *72.* TITUS, JOHN S., and DAMON BOYNTON, Cornell University, Ithaca, N. Y. The Relationship Between Soil Analysis and Leaf Analysis in 80 New York McIntosh Apple Orchards. (Illustrated, 3¼ x 4)

2:45 *73.* FISHER, E. G., Cornell University, Ithaca, N. Y. The Principles Underlying Foliage Applications of Urea for Nitrogen Fertilization of the McIntosh Apple. (Illustrated, 3¼ x 4)

3:00 *74.* KENWORTHY, A. L., Michigan State College, East Lansing, Mich. The Influence of Nutritional Intensity upon Nutrient-Element Interrelationships in Fruit Trees.

3:10 *75.* SIMONS, R. K., and A. L. KENWORTHY, Michigan State College, East Lansing, Mich. Leaf Composition and Nutrient-Element Balance of Montmorency Cherry, *(Prunus Cerasus):* Effect of Varying Concentrations of Ten Nutrient-Elements.

3:20 *76.* PROEBSTING, EDWARD L., JR., and A. L. KENWORTHY, Michigan State College, East Lansing, Mich. Leaf Analysis and Growth of Montmorency Cherry Trees *(Prunus Cerasus)* as Influenced by Solar Radiation and Intensity of Nutrition.

3:30 *77.* BATJER, L. P., B. L. ROGERS, and A. H. THOMPSON, USDA, Wenatchee, Wash. Fertilizer Applications as Related to Nitrogen, Phosphorus, and Potassium Utilization of Apple Trees. (Illustrated, 3¼ x 4)

3:40 *78.* SMITH, PAUL F., and WALTER REUTHER, USDA, 415 North Parramore St., Orlando, Fla. The Response of Young Valencia Orange Trees to Differential Supply of N, K, and Mg in Sand Culture.

3:50 *79.* REUTHER, WALTER, and PAUL F. SMITH, USDA, 415 North Parramore Street, Orlando, Fla. The Relation of N, K, and Mg Fertilization to Some Fruit Qualities of Valencia Oranges. (Illustrated, 2 x 2 and 3¼ x 4)

Section II, Vegetable Crops—General, *Murphy Auditorium.*

F. S. JAMISON, University of Florida, Gainesville, Fla., chairman

1:30 *80.* PERKINS, D. Y., JULIAN C. MILLER, and S. L. DALLYN, Louisiana Agricultural Experiment Station, Baton Rouge, La. Influence of Pod Maturity on the Vegetative and Reproductive Behavior of Okra.

1:40 *81.* LEARNER, E. N., and S. H. WITTWER, Michigan State College, East Lansing. Mich. Some Effects of Supplementary Temperature and Light on the Development of the Tomato Plant. (Illustrated. 2 x 2 and 3¼ x 4)

1:50 *82.* SMITH, CYRIL B., RUSSELL E. LARSON, and GEORGE A. TAYLOR. Pennsylvania State College, State College, Pa. The Relationship Between Range of Leaf Concentrations of Twelve Elements and Yields in Snap Beans as Determined in a Factorially Designed Fertilizer Experiment.

2:00 *83.* MACGILLIVRAY, JOHN H., University of California, Davis, Calif. Irrigation Studies in Vegetables.

2:15 *84.* LANA, EDWARD P., and E. S. HABER, Iowa State College, Ames, Iowa. Seasonal Variability as Indicated by Heat Units with Sweet Corn. (Illustrated, 3¼ x 4)

2:25 *85.* VANDEMARK, J. S., Purdue University, Lafayette, Ind., and S. H. WITTWER, Michigan State College, East Lansing, Mich. Some Effects of Maleic Hydrazide on Sweet Corn.

2:35 *86.* ROBERTS, R. H., University of Wisconsin, Madison 6, Wis. The Induction and Initiation of Flowering in the Onion. (Illustrated, 3¼ x 4)

2:45 *87.* WITTWER, S. H., and D. R. PATERSON, Michigan State College, East Lansing, Mich. Further Investigations on the Use of Maleic Hydrazide for Prolonging Dormancy in the Storage of Onions. (Illustrated, 2 x 2 and 3¼ x 4)

2:55 *88.* SMITH, ORA, and J. R. ORSENIGO, Cornell University, Ithaca, N. Y. Chemical Control of Nut Grass (*Cyperus esculentus*), preliminary report.

3:05 *89.* ALBAN, E. K., Ohio Agricultural Experiment Station, Wooster, Ohio. Pre-emergence Chemical Weed Control with Vegetable Crops, 1947-51. (Illustrated, 2 x 2)

3:20 *90.* WEBB, R. E., R. H. LARSON, and J. C. WALKER, Wisconsin Agricultural Experiment Station, Madison, Wis. Strains of the Potato Leaf Roll Virus. (Illustrated, 2 x 2)

3:35 *91.* COCHRAN, H. I., Pomona Products Co., Griffin, Ga. Control of the Leaf-footed Plantbug (*Leptoglossus phyllopus*) on Pimientos.

3:45 *92.* EL-KATTAN, A. A., and F. C. STARK, University of Maryland, College Park, Md. Tissue Activity and Structural Differences in the Storage Roots of Maryland Golden and Jersey Orange Sweet Potatoes.

Section III, Floriculture—Light and Temperature Effects, *Vincent Hall, Room 4.*

V. T. STOUTEMYER, University of California. Davis, Calif., chairman

1:30 *93.* STOUTEMYER, V. T., University of California, Los Angeles, Calif. Cold Resistance of Subtropical Ornamental Plants.

1:45 *94.* MCELWEE, E. W., Mississippi Agricultural Experiment Station, State College. Miss. The Influence of Photoperiod and Light Intensity on the Initiation and Development of Flower Primordia of the Common Camellia.

1:55 *95.* BECK, G. E., and B. ESTHER STRUCKMEYER, University of Wisconsin, Madison, Wis. Blossom Bud Development and Natural Branching of *Euphorbia pulcherrima.* (Illustrated, 2 x 2)

2:10 *96.* FURUTA, TOKUJI, and KENNARD NELSON, Ohio Agricultural Experiment Station, Wooster, Ohio. Initiation of Chrysanthemum Flower Buds at 60° F. (Warm) and 50° F. (Cool) Night Temperatures.

2:20 *97.* FURUTA, TOKUJI, and ALEX LAURIE, Ohio Agricultural Experiment Station, Wooster, Ohio. The Effect of Very High Night Temperatures on the Development of Chrysanthemum Flower Buds.

2:30 *98.* KRONE, PAUL R., and W. J. HANEY, Michigan State College, East Lansing, Mich. *Lilium longiflorum:* Effects of Precooling, Fertilizer Treatments. and Bottom Heat on Bud Count, Incidence of Tipburn, and Days to Bloom.

2:45 *99.* HANEY, W. J., Michigan State College, East Lansing, Mich. Snapdragon: Season of Bloom.

2:50 *100.* ACKERMAN, CHARLES, and W. J. HANEY, Michigan State College, East Lansing, Mich. Snapdragon: Foliar Dieback.

3:00 *101.* STUART, NEIL W., Plant Industry Station, USDA, Beltsville, Md. Some Effects of Artificial Light, Storage Temperatures, and Fertilizers on Blooming of Greenhouse Hydrangeas. (Illustrated, 2 x 2)

3:10 *102.* HALLIDAY, WILLIAM G., and DONALD P. WATSON, Michigan State College, East Lansing, Mich. The Influence of Temperature on Growth and Flowering of Greenhouse Carnations. (Illustrated, 2 x 2)

3:20 *103.* COOPER, CALVIN, and DONALD P. WATSON, Michigan State College, East Lansing, Mich. The Influence of Temperature and Day Length on the Growth and Flowering of *Viola odorata.* (Illustrated, 2 x 2)

3:30 *104.* DAVIS, WALTER E., Ohio Agricultural Experiment Station, Wooster, Ohio. Gardenia Flower Bud Initiation.

3:40 *105.* CARRIER, LEONARD E., University of California, Davis, Calif. A Study of Methods of Determining the Extent of Frost Injury of Roses.

3:50 *106.* CARRIER, LEONARD E., University of California, Davis, Calif. The Effect of Position tion of Parts and the Diameter of Parts of a Rose Plant on Hardiness.

4:00 *107.* CARRIER, LEONARD E., University of California, Davis, Calif. Factors Affecting Winter Hardiness and Frost Injury of Roses.

TUESDAY EVENING, SEPTEMBER 11

6:30 **Annual Banquet.** ***Junior Ballroom, Coffman Memorial Union.***

Program in charge of Minnesota group. Address by retiring president, ALBERT F. YEAGER, Department of Horticulture, University of New Hampshire, Durham, N. H. Entertainment Program.

WEDNESDAY MORNING, SEPTEMBER 12

Section I, Small Fruits, ***Mechanical Engineering Building, Room 18.***

DAMON BOYNTON, Cornell University, Ithaca, N. Y., chairman

9:00 *108.* YOUNG, R. S., Michigan Agricultural Experiment Station, East Lansing, Mich. Growth and Development of the Blueberry Fruit (*Vaccinium corymbosom* and *V. angustifolium*).

9:10 *109.* O'ROURKE, F. L., Michigan State College, East Lansing, Mich. Propagation Studies with the Low Dryland Blueberry, *Vaccinium vacillans.* (Illustrated)

9:20 *110.* CAIN, JOHN C., New York Agricultural Experiment Station, Geneva, N. Y. A Comparison of Ammonia and Nitrate Nitrogen for Blueberries. (Illustrated, 2 x 2)

9:30 *111.* DENISEN, E. L., Iowa State College, Ames, Iowa. Runner Inhibition in Strawberries with Plant Growth Regulators. (Illustrated, 2 x 2)

9:45 *112.* DENISEN, E. L., Iowa State College, Ames, Iowa. Controlling Weeds in Strawberries with Sodium 2,4 Dichlorophenoxy Ethyl Sulfate. (Illustrated, 2 x 2)

9:55 *113.* CARLSON, R. F., Michigan State College, East Lansing, Mich. Chemical Inhibition of Runner Formation in Strawberries. (Illustrated, 2 x 2 and 3¼ x 4)

10:05 *114.* SCHWARTZE, C. D., and ARTHUR S. MYHRE, Western Washington Experiment Station, Puyallup, Wash. Results of Grafting Northwest and Marshall Strawberry Plants to a Virus Indicator.

10:15 *115.* PARKER, M. W., and H. A. BORTHWICK, Plant Industry Station, Beltsville, Md. Photoperiodic Effects on Floral Initiation and Runner Production of Several Varieties of Strawberry. (Illustrated, 3¼ x 4)

10:30 *116.* VANDEMARK, J. S., and E. G. SHARVELLE, Purdue University, Lafayette, Ind. The Use of Certain Volatile Chemicals in Prevention of Strawberry Deterioration in Transit.

10:40 *117.* ALLMENDINGER, D. F., State College of Washington, Vancouver, Wash. The Effect of Some Pruning Treatments on the Yield of Red Raspberries. (Illustrated, 3¼ x 4)

10:55 *118.* BRIERLEY, WILFRED G., R. H. LANDON, and RICHARD J. STADTHERR. University of Minnesota, St. Paul, Minn. The Effect of Daily Alterations Between + 27° F. and + 39° F. on Retention or Loss of Cold Resistance in the Latham Raspberry.

11:10 *119.* LOTT, WREAL L., North Carolina Agricultural Experiment Station, Raleigh, N. C. Magnesium Deficiency in Muscadine Grapes.

Section II, Vegetable Crops.

ROBERT E. NYLUND, University of Minnesota, St. Paul, Minn., in charge. Tour by chartered bus of University of Minnesota vegetable crops experimental plots and Northrup King and Company plant with noon luncheon. Return to Coffman Memorial Union at 1 p.m.

Section III, Floriculture-Nutrition, ***Murphy Auditorium.***

V. T. STOUTEMYER, University of California, Davis, Calif., chairman

9:00 *120.* BECK, G. E., and B. ESTHER STRUCKMEYER, University of Wisconsin, Madison, Wis. Growth of *Euphorbia pulcherrima* in Potassium and Manganese Deficient Media and in Media Containing an Excess of Potassium and Nitrogen. (Illustrated, 2 x 2)

9:10 *121.* HAGER, KENNETH J., and JOHN G. SEELEY, Pennsylvania State College, State College, Pa. Foliar Application of Iron Solutions for Control of Chlorosis of Greenhouse Roses. (Illustrated, 2 x 2)

9:20 *122.* SEELEY, JOHN G., and DOLORES DE CARDONA VELAZQUEZ, Pennsylvania State College, State College, Pa. Effect of Fertilizer Applications on Leaf Burn and Growth of Croft Lilies. (Illustrated, 2 x 2)

9:30 *123.* EASTWOOD, TOM, Wise Potato Chip Company, Berwick, Pa. Forcing Creole Lilies at Different Levels of Soil Nitrate. (Illustrated, 2 x 2 and 3¼ x 4)

9:45 *124.* LINK, CONRAD B., and JAMES B. SHANKS, University of Maryland, College Park, Md. Experiments on the Mineral Nutrition of Hydrangea During the Growing and Forcing Periods.

10:00 *125.* SPECHT, ALSTON W., PAUL F. SMITH, and JOHN W. RESNICKY, Plant Industry Station, USDA, Beltsville, Md. Spectrochemical Quantitative Analysis of Plant Materials as Currently Conducted at Plant Industry Station. (Illustrated, 3¼ x 4)

10:15 *126.* SPECHT, ALSTON W., and NEIL W. STUART, Plant Industry Station, USDA, Beltsville, Md. Concentration of Ten Elements Determined Spectrochemically in Gladiolus Plants. (Illustrated, 2 x 2 and 3¼ x 4)

10:30 *127.* HOLLEY, W. D., DAVID L. WAGNER, and ROGER FARMER, Colorado A & M College, Fort Collins, Colo. The Effect of Different Levels of Soil Water and Soil Nitrates on the Production and Quality of Carnations.

10:40 *128.* VANDEMARK, J. S., and C. E. HOXSIE, Purdue University, Lafayette, Ind. The Effect of Certain Foliar Feeding on the Physical Quality of Snapdragon Stems.

10:50 *129.* NOICE, FRANK M., J. H. SCHULTZ, and L. D. POTTER, North Dakota Agricultural College, Fargo, N. D. A Study of Some Nutrient Deficiencies in American Elm.

11:00 *130.* CORNELL, PARDON W., and CHARAT SUNTARASING, University of Maryland, College Park, Md. Rooting Response of California Privet Cuttings as Influenced by Nutrition and Nutrition-Indolebutyric Acid Interaction.

11:10 *131.* SHANKS, JAMES B., and CONRAD B. LINK, University of Maryland, College Park, Md. Some Effects of Mineral Nutrition on the Poinsettia Stock Plant and Subsequent Rooting and Growth of the Cuttings.

11:20 *132.* PRESTON, WILLIAM H., JR., JAMES B. SHANKS, and PARDON W. CORNELL, University of Maryland, College Park, Md. Influence of Mineral Nutrition on Production of Cuttings and Rooting Response of Azalea.

Section IV, Chemical Thinning, Harvest Sprays, Post Harvest, Processing, *Vincent Hall, Room 4.*

AMIHUD KRAMER, University of Maryland, College Park, Md., chairman

9:00 *133.* FISHER D. V., Experiment Station, Summerland, British Columbia. Chemical Thinning of Fruit Using Concentrate Spraying Machines.

9:10 *134.* ALLEN, F. W., University of California, Agricultural Experiment Station, Davis, Calif. The Influence of Preharvest Drop Sprays Upon Respiration and Ripening of Bartlett Pears.

9:20 *135.* SOUTHWICK, F. W., and W. D. WEEKS, Massachusetts Agricultural Experiment Station, Amherst, Mass. The Influence of Chemical Thinning Treatments on Fruit Set, Size, and Yield and Flowering of Apples. (Illustrated, 2 x 2 and 3¼ x 4)

9:30 *136.* HOFFMAN, M. B., and L. J. EDGERTON, Cornell University, Ithaca, N. Y. Further Comparisons of 2,4,5-Trichlorophenoxypropionic Acid and Naphthalene-acetic Acid for Delaying the Harvest Drop of McIntosh Apples.

9:40 *137.* EDGERTON, L. J., and M. B. HOFFMAN, Cornell University, Ithaca, N. Y. The Effect of Thinning Peaches with Bloom and Postbloom Sprays on the Cold Hardiness of the Fruit Buds.

9:50 *138.* ORSENIGO, J. R., R. H. SEGALL, ORA SMITH, Cornell University, Ithaca, N. Y., and F. L. WELLMAN, Office of Foreign Agricultural Relations, U.S.D.A., at the Inter-American Institute of Agricultural Sciences, Turialba, Costa Rica. Systemic Foliage Distortions in Coffee Attributed to 2,4-D.

10:00 *139.* WHITE, DAVID G., and MARTIN L. RICE, Pennsylvania State College, State College, Pa. Promotion of Red Color by Apparent Synergistic Reactions of Compounds Sprayed on Delicious Apples. (Illustrated, 2 x 2)

10:10 *140.* BAKER, CLARENCE E., and E. C. MAXIE, Purdue University Agricultural Experiment Station, Lafayette, Ind. An Apparent Control of a Physiological Spot on Red Rome Apples in Storage by Activated Carbon and Shredded Oiled Paper. (Illustrated, 2 x 2)

10:20 *141.* HILL, R. G., JR., Ohio Agricultural Experiment Station, Wooster, Ohio, and I. C. HAUT, University of Maryland, College Park, Md. The Effect of Different Post-storage Temperatures on the Weight, Firmness, and Condition of Waxed and Unwaxed Stayman Winesap Apples.

10:30 *142.* LOTT, R. V., Agricultural Experiment Station, Urbana, Ill. The Spectrophotometric Measurement of Color in Maturing Halehaven and Elberta Peaches and Its Relation to Quality at Harvest and Following Ripening. (Illustrated, 2 x 2)

10:40 *143.* JOHANNESSEN, GEORGE A., Cornell University, Ithaca, N. Y. Condition Problems of McIntosh Apples in Retail Stores in February and March, 1951. (Illustrated, 2 x 2)

10:50 *144.* GOULD, W. A., FRED A. KRANTZ, JR., REES B. DAVIS, and NOEL COOPER, Ohio Agricultural Experiment Station, Columbus, Ohio. Pilot Plant Processing and Analysis of Tomatoes. (Illustrated, 3¼ x 4)

11:00 *145.* GOULD, W. A., FRED A. KRANTZ, JR., REES B. DAVIS, and JAMES MAVIS, Ohio Agricultural Experiment Station, Columbus, Ohio. Grade Relationship of Raw Tomatoes to Proccessed Canned Tomatoes, Tomato Juice, and Pulp. (Illustrated, 3¼ x 4)

11:10 *146.* GOULD, W. A., FRED A. KRANTZ, JR., REES B. DAVIS, and EUGENE CARROLL, Ohio Agricultural Experiment Station, Columbus, Ohio. Effect of Variety and Season on Color of Tomatoes for Processing. (Illustrated, 3¼ x 4)

11:20 *147.* GOULD, W. A., JOHN SHARP, and RALPH SHERMAN, Ohio Agricultural Experiment Station, Columbus, Ohio. Price and Quality Comparison of Selected Canned and Frozen Fruits and Vegetables on the Columbus Market. (Illustrated, 3¼ x 4)

11:30 *148.* KRAMER, AMIHUD, University of Maryland, College Park, Md. A Comparison of Methods for Determining Quality of Sweet Corn. (Illustrated)

11:40 *149.* FORSHEY, C. W., SIK VUNG TING, and E. K. ALBAN, Ohio State University, Columbus 10, Ohio. Post-harvest Changes in Tomato Fruits as Influenced by Storage Temperature. (Illustrated, 2 x 2)

WEDNESDAY AFTERNOON, SEPTEMBER 12

1:30 **Section I. Symposium: Investigations in Polyploidy of Fruits, *Mechanical Engineering Building, Room 4.***

GEORGE M. DARROW, USDA, Beltsville, Md., chairman

1. Introduction. GEORGE M. DARROW. USDA, Beltsville, Md. (5 minutes).
2. Polyploid Grape Breeding. H. P. OLMO, University of California, Davis, Calif. (Illustrated, 30 minutes).
3. Polyploid Apple Research at Geneva. JOHN EINSET, New York State Experiment Station, Geneva, N. Y. (Illustrated, 30 minutes).
4. Investigations in Polyploidy of Fruits. HAIG DERMEN, USDA, Beltsville, Md. (Illustrated, 30 minutes).
5. General Discussion. (30 minutes).

1:30 **Section II. Panel Discussion: Results of Survey on Vegetable Breeding Projects, Objectives, Personnel, etc., *Mechanical Engineering Building, Room 18.***

RUSSELL E. LARSON, Pennsylvania State College, State College, Pa., chairman

1:30 **Section III. Panel Discussion: Plant Tissue Analysis, *Ford Hall, Room 15.***

JOHN H. SEELEY, Pennsylvania State College, State College, Pa., chairman

1. Sampling Techniques. OSMUND LILLELAND, University of California, Davis, Calif.
2. Preparation of Material for Analysis. PAUL F. SMITH, USDA, Subtropical Fruit Field Station, Orlando, Fla.
3. Referee Samples. A. L. KENWORTHY, Michigan State College, East Lansing, Mich.

1:30 **Section IV. Panel Discussion: Fruit Crop Varieties, *Vincent Hall, Room 4.***

LAURENCE H. MACDANIELS, Cornell University, Ithaca, N. Y., chairman

1:30 **Section V. Panel Discussion. *Ford Hall, Room 120.***

1. Methods of Quality Evaluation for Fruits and Vegetables.
2. Effect of Growth Regulating Substances on Post-harvest Physiology.
3. Evaluating Palatability in Citrus Fruits. PAUL L. HARDING, Bureau of Plant Industry, Soils and Agricultural Engineering, U.S.D.A., Orlando, Fla.

WEDNESDAY EVENING, SEPTEMBER 12

8:30-11:00. **Biologists' Smoker and Open House at the Biological Sciences Exhibit Hall, *Coffman Memorial Union.***

THURSDAY MORNING, SEPTEMBER 13

9:00 Tour to observe canning crops experimental work, courtesy of the Green Giant Company. All-day Tour. J. D. BARNARD, Green Giant Company, LeSueur, Minn., in charge.

9:00 Tour of the University of Minnesota Fruit Breeding Farm, Excelsior, Minn.; return to Coffman Memorial Union about 4:30 p.m. A. N. WILCOX, University of Minnesota, St. Paul, in charge.

3. AMERICAN SOCIETY OF HUMAN GENETICS

The American Society of Human Genetics was organized at Washington, D. C., September, 1948. Its objectives are to provide opportunities for closer association among persons interested in problems relating to human inheritance and especially to encourage research in human heredity. Total membership, 362.

President, LEE R. DICE, University of Michigan, Ann Arbor, Mich.
Vice-President, C. P. OLIVER, University of Texas, Austin, Texas.
Secretary-Treasurer, H. H. STRANDSKOV, University of Chicago, Chicago, Ill.

Conference Room No. 326 at the ***Coffman Memorial Union*** has been reserved for the entire convention period for the use of the American Society of Human Genetics for council, committee, and other small group meetings.

Program of Fourth Annual Meeting

MONDAY, MORNING, SEPTEMBER 10

9:30 ***Heart Hospital Theater,*** NORMA FORD WALKER, presiding.

150. KALLMANN, F. J., New York State Psychiatric Institute, Columbia University, New York, N. Y. Twin and Sibship Study of Overt Male Homosexuality. (Illustrated, 3¼ x 4)

151. HUNT, H. R. and C. A. HOPPERT, Michigan State College, East Lansing, Mich. Inheritance of Susceptibility and Resistance to Dental Caries in Rats *(Rattus norvegicus)*.

152. SCHUT, J. W., University of Minnesota, Minneapolis, Minn. Hereditary Ataxia: Survey of Certain Salient Clinical, Pathological, and Genetic Features of a Large Genealogy. (Illustrated, 3¼ x 4)

153. METRAKOS, J. D., McGill University, Montreal, Quebec. Congenital Heart Disease in Twins. (Illustrated, 2 x 2)

154. STEPHENS, F. E., University of Utah, Salt Lake City, Utah. Muscular Dystrophy in Utah Families. (Illustrated, 3¼ x 4)

155. GARDNER, E. J. and C. M. WOOLF, University of Utah, Salt Lake City, Utah. Genetics Studies of Human Breast Cancer. (Illustrated, 3¼ x 4)

MONDAY, AFTERNOON, SEPTEMBER 10

1:30 **Symposium: Human Genetics and Human Welfare, *Ford Hall, Room 55.*** CLARENCE P. OLIVER, presiding.

a. LEVINE, PHILIP. Ortho Research Foundation, Raritan, N. J. The Rh-Hr Blood Types and Their Significance to Man.

b. STRANDSKOV, H. H. University of Chicago, Chicago, Ill. The Hereditary, Social, and Cultural Import of Mate Selection Based on Similarity of Phenotype.

c. WILLIAMS, R. J. University of Texas, Austin, Texas. Nutritional Possibilities Arising Out of Genetic Differences.

d. REED, SHELDON C. University of Minnesota, Minneapolis, Minn. Counseling as a Factor in Human Welfare.

4:30 Meeting of the Board of Directors of the American Society of Human Genetics, ***Coffman Memorial Union, Room 326.***

MONDAY EVENING, SEPTEMBER 10

8:30 **General Meeting for All Participating Societies, American Institute of Biological Sciences. *Northrop Auditorium.***

Federal support of Fundamental Research in the Biological Sciences

Address by ALAN WATERMAN, Director, National Science Foundation.

TUESDAY MORNING, SEPTEMBER 11

9:30 ***Heart Hospital Theatre,*** LEE R. DICE, Presiding.

156. FRINGS, H. Pennsylvania State College, State College, Pa. A Preliminary Assessment of Genetic Hazards from Irradiation with High Intensity Air-borne Sound.

157. FRASER, F. C., McGill University, Montreal, Quebec. Clinical Applications of Genetics. (Illustrated, 3¼ x 4)

158. FALLS, H. F., and J. V. NEEL, University of Michigan, Ann Arbor, Mich. Further Evidence for the Inheritance of Retinoblastoma. (Illustrated, 2 x 2)

159. NEEL, J. V., and H. F. FALLS, University of Michigan, Ann Arbor, Mich. The Rate of Mutation of the Gene Responsible for Human Retinoblastoma. (Illustrated, 2 x 2)

160. STEINBERG, A. G., S. W. BECKER, Jr., T. B. FITZPATRICK, and R. R. KIERLAND. Mayo Clinic, Rochester, Minn. A Statistical and Genetic Study of 412 Psoriatic Patients and Their Parents and Siblings. (Illustrated, 3¼ x 4)

161. WALKER, N. F., University of Toronto, Toronto, Ontario. Finger, Palm, and Sole Patterns in the Diagnosis of Mongolism.

TUESDAY AFTERNOON, SEPTEMBER 11

1:30 ***Heart Hospital Theatre,*** RAY C. ANDERSON, presiding

162. STILES, K. A., Michigan State College, East Lansing, Mich. Hereditary Exostosis of the First Cuneiform Bone. (Illustrated, 2 x 2)

163. GLASS, BENTLEY, and J. C. KISTLER, Johns Hopkins University, Baltimore, Md. Hyperextensibility of the Thumbs. (Illustrated, 3¼ x 4)

164. MACKLIN, M. T., Ohio State University, Columbus, Ohio. The Excess of Females Expected Among Affected Offspring of Consanguineous Matings Involving Transmission of Partially Sex-linked Recessive Genes.

165. DAVID, P. R., University of Oklahoma, Norman, Okla. Permissible Inferences from Twin-concordance Data.

166. DAHLBERG, A. A., U.S.P.H.S., Chicago, Ill. Genetic Factors in Occlusal Dimensions of Human Teeth. (Illustrated, 3¼ x 4)

167. SPUHLER, J. N., University of Michigan, Ann Arbor, Mich. The Effective Size of the Panmictic Unit Centering about Ann Arbor, Michigan, 1900-1950. (Illustrated, 2 x 2)

4:30 **Annual Business Meeting, *Heart Hospital Theatre.***

TUESDAY EVENING, SEPTEMBER 11

7:30 **Presidential Address, *Minnesota Museum of Natural History Auditorium.***

Heredity Clinics: Their Value for Public Service and for Research.

LEE R. DICE, University of Michigan, Ann Arbor, Mich.

WEDNESDAY MORNING, SEPTEMBER 12

10:00 Motion Pictures, ***Heart Hospital Theatre.*** Dr. Schut will present his motion pictures on Hereditary and Clinical Aspects of Marie's Cerebellar Ataxia.

WEDNESDAY AFTERNOON, SEPTEMBER 12

2:00 The Dight Institute will be open to visitors for informal discussions of the projects being studied. Everyone is cordially invited to drop in. The Dight Institute is on the ground floor, ***Room 12, Zoology Building.***

WEDNESDAY EVENING, SEPTEMBER 12

8:30-11:00. **Biologists' Smoker** and **Open House at the Biological Sciences Exhibit Hall, *Coffman Memorial Union.***

4. AMERICAN SOCIETY OF NATURALISTS

The American Society of Naturalists was organized at Springfield, Massachusetts, in 1883 as the Society of Naturalists of the Eastern United States. The name was changed to the present title in 1885. Objectives are the discussion, advancement, and diffusion of knowledge concerning the broader biological problems, including organic evolution, thus serving to correlate the various biological sciences into a common philosophy of biology. Total membership, 620.

President, PAUL C. MANGELSDORF, Harvard University, Cambridge, Mass.

Vice-President, B. P. KAUFMANN, Carnegie Institute, Cold Spring Harbor, N. Y.

Secretary, BENTLEY GLASS, Johns Hopkins University, Baltimore, Md.

Treasurer, DONALD POULSON, Yale University, New Haven, Conn.

Conference Room No. 345 in the ***Coffman Memorial Union*** has been reserved for council and committee meetings of the American Society of Naturalists.

TUESDAY EVENING, SEPTEMBER 11

8:45 **Presidential Address, *Minnesota Museum of Natural History Auditorium.***

Evolution Under Domestication
PAUL C. MANGELSDORF, Harvard University

WEDNESDAY AFTERNOON, SEPTEMBER 12

2:00 **Symposium: Patterns of Cellular Organization. *Minnesota Museum of Natural History Auditorium.*** BERWIND P. KAUFMANN, presiding

THOMAS F. ANDERSON, University of Pennsylvania, Philadelphia, Pa. Stereoscopic Studies of Cells and Viruses in the Electron Microscope.

KEITH R. PORTER, Rockefeller Institute for Medical Research, New York, N. Y. The Submicroscopic Structure of Tissue Cells.

DANIEL MAZIA, University of California, Berkeley, Calif. Molecular Organization in the Cell Nucleus.

JOHN T. BONNER, Princeton University, Princeton, N. J. The Pattern of Differentiation in Amoeboid Slime Molds.

4:30 **Business Meeting, *Minnesota Museum of Natural History Auditorium.***

5. AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS

The American Society of Plant Physiologists was organized in March, 1924, with its major objective the encouragement of plant physiology, both as a pure science and as an applied phase of botanical research. Through its journal, Plant Physiology, it promotes the publication of the results of physiological research. Total membership, 906.

President, C. H. WADLEIGH, Bureau of Plant Industry, Beltsville, Md.

Vice-president, T. C. BROYER, University of California, Berkeley, Calif.

Secretary, A. S. CRAFTS, University of California, Davis, Calif.

Executive Secretary-Treasurer, J. FISHER STANFIELD, Miami University, Oxford, Ohio.

Representative on the Governing Board, A.I.B.S., D. B. ANDERSON, North Carolina State College, Raleigh, N. C.

Conference Room No. 327, *Coffman Memorial Union*, has been reserved for the use of the American Society of Plant Physiologists, for council and committee meetings, throughout the convention period.

Program of Twenty-sixth Annual Meeting

SUNDAY EVENING, SEPTEMBER 9

7:30 **Executive Committee Meeting, *Coffman Memorial Union, Room 327.***

MONDAY MORNING, SEPTEMBER 10

9:00 **Session 1A.** Joint Meeting with the Physiological Section of the Botanical Society of America. C. H. WADLEIGH, presiding.
Ford Hall, Room 80. See page 28.

9:00 **Session 1B.** Joint Meeting with the Physiological Section of the Botanical Society of America. D. R. GODDARD, presiding.
Ford Hall, Room 55. See page 28.

9:00 **Session 1C.** Joint Meeting with the Physiological Section of the Botanical Society of America. T. C. BROYER, presiding.
Ford Hall, Room 155. See p. 29.

MONDAY AFTERNOON, SEPTEMBER 10

2:00 **Symposium: Why Plants Grow Where They Do. *Minnesota Museum of Natural History Auditorium.*** W. N. HIESEY, presiding.

Joint Meeting with the Physiological Section of the Botanical Society of America, the American Society for Horticultural Science, and the Ecological Society of America.
See p. 31.

4:30 **Business Meeting. *Minnesota Museum of Natural History Auditorium.***

MONDAY EVENING, SEPTEMBER 10

8:30 **General Meeting for All Participating Societies, American Institute of Biological Sciences, *Northrop Auditorium.***

Federal Support of Fundamental Research in the Biological Sciences.

Address by ALAN WATERMAN, Director, National Science Foundation.

TUESDAY MORNING, SEPTEMBER 11

9:00 **Session 1A.** Joint Meeting with the Physiological Section of the Botanical Society of America. C. H. WADLEIGH, presiding.
Ford Hall, Room 120. See p. 32.

9:00 **Session 1B.** Joint Meeting with the Physiological Section of the Botanical Society of America. D. R. GODDARD, presiding.
Ford Hall, Room 155. See p. 32.

9:00 **Session 1C.** Joint Meeting with the Physiological Section of the Botanical Society of America. P. J. KRAMER, presiding.
Ford Hall, Room 55. See p. 33.

9:00 **Session 1D.** Joint Session with the Physiological Section of the Botanical Society of America. T. C. BROYER, presiding.
Ford Hall, Room 80. See p. 33.

TUESDAY AFTERNOON, SEPTEMBER 11

2:30 **Symposium: Organic Acid Metabolism in Higher Plants.** ***Minnesota Museum of Natural History Auditorium.***
D. R. GODDARD, presiding.

Introductory Remarks and Historical Background. The Chairman.

Carbon Dioxide Reduction in Relation to Organic Acid Metabolism.
SEVERO OCHOA, New York University, New York, N. Y.

The Role of Pyridine Nucleotides in Organic Acid Metabolism of Higher Plants.
ERIC CONN, University of Chicago, Chicago, Ill.

The Oxidation of Hydroxy Acids by Higher Plants.
R. H. BURRIS, University of Wisconsin, Madison, Wis.

The Respiratory Role of Organic Acids in Higher Plants.
GEORGE LATIES, California Institute of Technology, Pasadena, Calif.

4:30 **Annual Meeting.** C. H. WADLEIGH, presiding.

TUESDAY EVENING, SEPTEMBER 11

6:30 **Banquet, *Main Ballroom, Hotel Nicollet, Minneapolis.***
C. H. WADLEIGH, presiding

1. Announcement of the Charles Reid Barnes Life Membership Award.
2. Address by retiring president, K. V. THIMANN.
3. Stephen Hales Lecture, BIRGIT VENNESLAND. (Illustrated, 3¼ x 4 and blackboard)

WEDNESDAY MORNING, SEPTEMBER 12

9:00 **Session 1A.** Joint Meeting with the Physiological Section of the Botanical Society of America. C. H. WADLEIGH, presiding.
Ford Hall, Room 155. See p. 43.

9:00 **Session 1B.** Joint Meeting with the Physiological Section of the Botanical Society of America. D. R. GODDARD, presiding.
Ford Hall, Room 55. See p. 43.

9:00 **Session 1C.** Joint meeting with the Physiological Section of the Botanical Society of America. K. V. THIMANN, presiding.
Ford Hall, Room 80. See p. 44.

WEDNESDAY AFTERNOON, SEPTEMBER 12

2:00 **Session 1A.** Joint Meeting with the Physiological Section of the Botanical Society of America. C. H. WADLEIGH, presiding.
Ford Hall, Room 55. See p. 45.

2:00 **Session 1B.** Joint Meeting with the Physiological Section of the Botanical Society of America. D. R. GODDARD, presiding.
Ford Hall, Room 80. See p. 46.

2:00 **Session 1C.** Joint Meeting with the Physiological Section of the Botanical Society of America. P. J. KRAMER, presiding.
Ford Hall, Room 155. See p. 46.

WEDNESDAY EVENING, SEPTEMBER 12

8:30-11:00. **Biologists' Smoker and Open House at the Biological Sciences Exhibit Hall, *Coffman Memorial Union.***

6. AMERICAN SOCIETY OF PLANT TAXONOMISTS

The American Society of Plant Taxonomists was organized in 1937 at Boston, Massachusetts, to promote fellowship and professional interests among American plant taxonomists. Total membership, 628.

President, REED C. COLLINS, Harvard University, Cambridge, Mass.

Secretary, ROBERT FOSTER, Harvard University, Cambridge, Mass.

Chairman of the Council, ROGERS MCVAUGH, University of Michigan, Ann Arbor, Mich.

MONDAY MORNING, SEPTEMBER 10

9:00 Joint Meeting with the Systematic Section of the Botanical Society of America. ERNST C. ABBE, presiding.
Mechanical Engineering Building, Room 18.
See p. 30.

MONDAY AFTERNOON, SEPTEMBER 10

2:30 Joint Meeting with Systematic Section of the Botanical Society of America. ERNST C. ABBE, presiding.
Mechanical Engineering Building, Room 18.
See p. 31.

MONDAY EVENING, SEPTEMBER 10

8:30 **General Meeting for All Participating Societies, American Institute of Biological Sciences, *Northrop Auditorium.***

Federal Support of Fundamental Research in the Biological Sciences.

Address by ALAN WATERMAN, Director, National Science Foundation.

TUESDAY MORNING, SEPTEMBER 11

9:00 Joint Meeting with the Systematic Section of the Botanical Society of America. ERNST C. ABBE, presiding.
Mechanical Engineering Building, Room 18.
See p. 41.

TUESDAY AFTERNOON, SEPTEMBER 11

2:30 Joint Meeting with the Systematic Section of the Botanical Society of America. ERNST C. ABBE, presiding.
Mechanical Engineering Building, Room 18.
See p. 43.

TUESDAY EVENING, SEPTEMBER 11

6:30 **Banquet and Annual Meeting. *Hotel Nicollet, Minneapolis.***

WEDNESDAY EVENING, SEPTEMBER 12

8:30-11:00 **Biologists' Smoker and Open House at the Biological Sciences Exhibit Hall, *Coffman Memorial Union.***

7. BOTANICAL SOCIETY OF AMERICA, INC.

The Botanical Society of America was organized in 1894 for scientific and educational advancement in the field of botany, to serve as a clearinghouse for botanists of America in respect to all matters of general botanical interests, to provide an opportunity for the presentation of research studies, and to furnish avenues for publication. Total membership, 1851.

President, KATHERINE ESAU, University of California, Davis, Calif.

Secretary, HARRIET B. CREIGHTON, Wellesley College, Wellesley, Mass.

Treasurer, TRUMAN G. YUNCKER, DePauw University, Greencastle, Ind.

Representative on the Governing Board, AIBS, RALPH E. CLELAND, University of Indiana, Bloomington, Ind.

Conference Room No. 346, *Coffman Memorial Union,* has been reserved for council and committee meetings for the Botanical Society of America throughout the convention period.

SUNDAY, SEPTEMBER 9

2:00 **Meeting of the Council, *Room 346, Coffman Memorial Union.***

8:00 **Meeting of the Council, *Room 346, Coffman Memorial Union.***

MONDAY MORNING, SEPTEMBER 10

Concurrent Sessions 1–5

Session 1A. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 80.*** C. H. WADLEIGH, presiding.

9:00 *168.* STRUCKMEYER, B. ESTHER, University of Wisconsin, Madison, Wis. (B) The Effect of Maleic Hydrazide on the Anatomical Structure of Croft Easter Lilies. (Illustrated, 2 x 2)

9:10 *169.* RAPPAPORT, JACQUES, University of Virginia, Boyce, Va. (B) Effects of Maleic Hydrazide on Embryo Growth in Vitro and in Vivo. (Illustrated, 3¼ x 4)

9:25 *170.* WEINTRAUB, R. I., J. N. YEATMAN, and J. A. LOCKHART, Camp Detrick, Frederick, Md. (B) Transformations of 2, 4-dichlorophenoxyacetic Acid in Plants. (Illustrated, 3¼ x 4)

9:40 *171.* MULLISON, WENDELL R., Midland, Mich. (P) The Relationship Between the Age of Plant Organs and Their Ability to Translocate 2,4-D as Found in Bean and Tomato Plants. (Illustrated, 3¼ x 4)

10:10 *172.* HOROWITZ, EMANUEL, and ALICE P. WITHROW, Smithsonian Institution, Washington, D. C. (P) Effects of Ammonium 2,4-dichlorophenoxyacetate on Water Exchange in Bean Plants. (Based on contract work between Smithsonian Institution and Chemical Corps, Camp Detrick, Md.). (Illustrated, 3¼ x 4)

10:20 *173.* WITHROW, ALICE P., EMANUEL HOROWITZ, and R. B. WITHROW, Smithsonian Institution, Washington, D. C. (P) Salt Uptake in Bean Plants as Influenced by 2,4-D. (Based on contract work between Smithsonian Institution and Chemical Corps, Camp Detrick, Md.). (Illustrated, 3¼ x 4)

10:30 *174.* HAMNER, C. L., and H. B. TUKEY, Michigan State College, East Lansing, Mich. (P) Chlorophyll Inhibition and Herbicidal Action of 3(alpha-amino-ethyl)-5Methyl Tetronic Acid. (Illustrated, 2 x 2 and 3¼ x 4)

10:40 *175.* TODD, GLENN W., University of Missouri, Columbia, Mo. (P) Enzyme Changes in Relation to Breaking of Dormancy in the Potato. (Illustrated, 3¼ x 4)

11:00 *176.* SULLIVAN, A. J., Jr., University of Missouri, Columbia, Mo. (P) A Preliminary Report on the Comparative Biochemistry of Dormancy in the Myxomycete *Physarum polycephalum.* (Illustrated, 3¼ x 4)

11:15 *177.* LEVITT, J., University of Missouri, Columbia, Mo. (P) Protein and Metal-protein Changes Associated with Breaking of Rest Period of Potato Tubers. (Illustrated, 3¼ x 4)

Session 1B. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 55.*** D. R. GODDARD, presiding.

9:00 *178.* JOHNSTON, JAMES A., and ALBERT W. FRENKEL, University of Minnesota, Minneapolis, Minn. (P) Hydrogenase Activity of Resting Cultures of *Rhodospirillum rubrum.* (Illustrated, 3¼ x 4)

9:10 *179.* TOLBERT, N. EDWARD, MARJORIE S. COHAN, and STERLING B. HENDRICKS, U.S.D.A., Plant Industry Station, Beltsville, Md. (P) Activation of Glycolic Acid Dehydrogenase of Plants. (Illustrated, 3¼ x 4)

9:25 *180.* TEUBNER, FREDERICK G., and ANDREW E. MURNEEK, University of Missouri, Columbia, Mo. (P) The Effect of p-Chlorophenoxyacetic (CIPA) and Indoleacetic (IA) Acids on Dehydrogenase Enzymes of Tomato Ovules. (Illustrated, 3¼ x 4)

9:40 *181.* GALSTON, ARTHUR W., California Institute of Technology, Pasadena, Calif. (B) An Inverse Correlation Between Catalase Level and Growth Rate in Plant Tissue Cultures. (Illustrated, 3¼ x 4)

9:55 *182.* GALSTON, A. W., California Institute of Technology, Pasadena, Calif. R. K. BONNICHSEN, Medical Nobel Institute, Stockholm, Sweden, and D. I. ARNON, University of California, Berkeley, Calif. (P) The Preparation of Highly Purified Spinach Leaf Catalase. (Illustrated, 3¼ x 4)

10:10 *183.* MCCLENDON, JOHN H., University of Pennsylvania, Philadelphia, Pa. (B) The Intracellular Localization of Cytochrome Oxidase in Green Leaves. (Illustrated, 2 x 2)

10:25 *184.* WEISEL, PHYLLIS, and PAUL J. ALLEN, University of Wisconsin, Madison, Wis. (B) Enhanced Production of Components of the Cytochrome System in *Ustilago sphaerogena* by a Factor in Yeast Extract. (Illustrated, 3¼ x 4)

10:40 *185.* ANDERSON, D. G., University of Chicago, Chicago, Ill. (P) Introduced by BIRGIT VENNESLAND. Distribution, Synthesis, and Destruction of TPN in Higher Plants. (Illustrated, 3¼ x 4)

10:55 *186.* MACDOWALL, FERGUS D. H., and ALFRED S. SUSSMAN, University of Michigan, Ann Arbor, Mich. (B) The Tyrosinase, Cytochrome Oxidase, and Photolytic Activities of Chloroplasts Isolated from Barley Leaves During the Greening Process. (Illustrated, 3¼ x 4)

11:05 *187.* GILBERT, SEYMOUR G., and CLARE M. GROPP, U. S. Field Laboratory for Tung Investigations, Gainesville, Fla. (P) Some Characteristics of Tung Leaf Oxidase.

11:20 *188.* NEWCOMB, ELDON H., University of Wisconsin, Madison, Wis. (P) The Effect of Auxin on Ascorbic Oxidase Activity in Tobacco Pith Cells. (Illustrated, 3¼ x 4)

11:35 *189.* SMITH, FREDERICK G., EILEEN L. GINTER, and GLYN O. THRONEBERRY, Iowa State College, Ames, Iowa. (P) A Colorimetric Method for Measuring Oxidative Enzymes and Its Application to Corn Embryo and Root Tip Tissues. (Illustrated, 3¼ x 4)

Session 1C. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 155.*** T. C. BROYER, presiding.

9:00 *190.* WAGENKNECHT, A. C., FRANK A. LEE, and FRANK P. BOYLE, New York State Agriculture Experiment Station, Geneva, N. Y. (P) The Loss of Chlorophyll in Green Peas During Frozen Storage. (Illustrated, 3¼ x 4)

9:15 *191.* NAF, ULRICH, and AUBREY W. NAYLOR, Yale University, New Haven, Conn. (P) Carbon Dioxide and Light Requirement in the Germination of *Onoclea sensibilis* Spores. (Illustrated, 3¼ x 4)

9:30 *192.* DUGGER, W. M., JR., University of Maryland, College Park, Md. (P) A Study of the Permeability of Certain Epidermal Membranes to Gaseous Carbon Dioxide. (Illustrated, 3¼ x 4)

9:45 *193.* FRENCH, C. S., and VIOLET M. KOSKI, Carnegie Institution of Washington, Stanford, Calif. (B) Fluorescence Spectra of Red Algae and the Transfer of Energy from Phycoerythrin to Phycocyanin and Chlorophyll. (Illustrated, 3¼ x 4)

10:00 *194.* MACDOWALL, FERGUS D. H., University of Michigan, Ann Arbor, Mich. (B) Electron-micrographic Study of the Chlorophyll Containing Bodies of Certain Blue-Green Algae. (Illustrated, 3¼ x 4)

10:10 *195.* HOLT, A. S., and E. RABINOWITCH, University of Illinois, Urbana, Ill. (B) Photochemical Reactions of Chlorophyll. (Illustrated, 3¼ x 4)

10:20 *196.* ARONOFF, S., and LEO P. VERNON, Iowa State College, Ames, Iowa. (P) Turnover of Chlorophyll *a* in Soy Bean Leaves. (Illustrated, 3¼ x 4)

10:35 *197.* MORELAND, D. E., North Carolina State College, Raleigh, N. C., and W. M. DUGGER, JR., University of Maryland, College Park, Md. (P) Application of a Radioautographic Technique to a Study of Carbon (C^{14}) Fixation in Hydrangea Leaves. (Illustrated, 3¼ x 4)

11:00 *198.* DECKER, JOHN P., State University of New York, Syracuse, N. Y. (P) Uncommon Denominators in Photosynthesis. (Illustrated, 2 x 2)

Session 2. General Section, ***Mechanical Engineering, Room 4.*** SAMUEL L. MEYER, presiding.

9:00 *199.* BALL, ERNEST, University of North Carolina, Raleigh, N. C. Morphogenesis of Shoots After Isolation of the Shoot Apex of *Lupinus albus.* (Illustrated)

9:15 *200.* MILLINGTON, W. F., University of Wisconsin, Madison, Wis. The Shoot Apex and Floral Initiation in *Xanthium.* (Illustrated)

9:30 *201.* BOKE, NORMAN H., University of Oklahoma, Norman, Okla. Leaf and Areole Development in *Coryphantha.* (Illustrated)

9:45 *202.* GRIFFITH, MILDRED, University of Florida, Gainesville, Fla. Leaf Histogenesis in *Araucaria.* (Illustrated)

10:00 *203.* WETMORE, RALPH H., JEAN P. NITSCH, and JULIUS SILBERGER, Harvard University, Cambridge, Mass. Morphogenetic Effects of Nutrition upon the Development of Leaf and Stelar Pattern in Fern Sporelings. (Illustrated)

10:15 *204.* FOSTER, ADRIANCE S., University of California, Berkeley, Calif. Foliar Venation in the *Quiinaceae.* (Illustrated)

10:35 *205.* WYLIE, ROBERT B., State University of of Iowa, Iowa City, Iowa. Tissue-extensions Along Veins in Leaves of Dicotyledons under Differing Climatic or Growth Conditions. (Illustrated)

10:45 *206.* LOMMASSON, ROBERT C., University of Nebraska, Lincoln, Nebr. Venation and Mesophyll Organization of Grass Leaves. (Illustrated)

11:00 *207.* HEIMSCH, CHARLES, The University of Texas, Austin, Texas. Development of Vascular Tissues in Roots of Barley Grown in Aerated Culture Solutions. (Illustrated)

11:10 *208.* SHIELDS, LORA M., New Mexico Highlands University, Las Vegas, N. M. Gross and Microscopic Structural Modifications of Roots Growing in Gypsum Drifts. (Illustrated)

11:25 *209.* CANRIGHT, JAMES E., Indiana University, Bloomington, Ind. Significance of Seedling Anatomy in the Phylogeny of the *Magnoliaceae.* (Illustrated)

11:35 *210.* POLUNIN, NICHOLAS, Harvard University, Cambridge, Mass. Progress in Arctic Aero-Palynology. (Illustrated, 3¼ x 4)

Session 3. Joint Meeting of Systematic Section with the American Society of Plant Taxonomists. ***Mechanical Engineering, Room 18.*** ERNST C. ABBE, presiding.

9:00 *211.* OWNBEY, GERALD B., University of Minnesota, Minneapolis, Minn. Taxonomic Problems in *Argemone.* (Illustrated)

9:10 *212.* ROUSSEAU, JACQUES, and MARCEL RAYMOND, Montreal Botanical Garden, Montreal, Quebec. A New *Agoseris* from Quebec. (Illustrated)

9:20 *213.* CALLEN, ERIC O., McGill University, Montreal, Quebec. The Wilmott Method for Identification and Study of Critical Genera. (Illustrated)

9:30 *214.* MASON, CHARLES T., JR., University of Wisconsin, Madison, Wis. The Genus *Limnanthes.*

9:45 *215.* FOX, WILLIAM B., and R. K. GODFREY, North Carolina State College, Raleigh, N. C., and H. L. BLOMQUIST, Duke University, Durham, N. C. Recent Floristic Work in North Carolina: A Progress Report. (Illustrated)

10:00 *216.* SVENSON, HENRY K., American Museum of Natural History, New York, N. Y. Origin of the Galapagos Flora. (Illustrated)

Session 4. Teaching Section, ***Chemical Engineering, Room 240.*** ERNEST L. STOVER, presiding.

9:00 **Symposium: Experimental Work on Teaching of Botany.**

a. PETRY, LOREN C., Cornell University, Ithaca, N. Y. The Construction and Use of Problems in Botanical Teaching.

b. FULLER, HARRY J., University of Illinois, Urbana, Ill. Problem Solving in the Beginning Botany Course.

c. SEDGWICK, PAUL J., Syracuse University, Syracuse, N. Y. The Use of Natural Color Stereographs and Other Visual Aids in the Teaching of General Botany. (Illustrated)

d. JONES, KENNETH L., University of Michigan, Ann Arbor, Mich. A Non-laboratory Course in Botany for the Liberal Arts Student.

e. NORRIS, FRED H., University of Tennessee, Knoxville, Tenn. Preconceptions of Students in Beginning Botany.

Session 5. Joint Meeting of Microbiological Section with the Mycological Society of America. ***Physics, Room 133.*** W. LAWRENCE WHITE, presiding.

9:30 *217.* FRENKEL, ALBERT W., and JAMES A. JOHNSTON, University of Minnesota, Minneapolis 14, Minn. The Comparative Physiology of Photoreduction and of Photofermentation by *Chlamydomonas Moewusii* and by *Rhodospirillum rubrum.* (Illustrated, 3¼ x 4)

9:45 *218.* LEWIS, RALPH W., Michigan State College, East Lansing, Mich. The Nutrition of *Alternaria solani.* (Illustrated 3¼ x 4)

10:00 *219.* PAGE, ROBERT M., Stanford University, Stanford, Calif. Studies on the Nutrition and Growth of *Pilobolus.* (Illustrated, 3¼ x 4)

10:15 *220.* DARBY, RICHARD T., and GABRIEL R. MANDELS, Biological Laboratories, Philadelphia Quartermaster Depot, U. S. Army, Philadelphia 45, Pa. Carbohydrate Metabolism of *Myrothecium verrucaria.* (Illustrated 3¼ x 4)

10:30 *221.* MANDELS, GABRIEL R., Biological Laboratories, Philadelphia Quartermaster Depot, U. S. Army, Philadelphia 45, Pa. Carbohydrate Metabolism of Fungus Spores. (Illustrated, 3¼ x 4)

10:45 *222.* GASTEL, RUTH, and MARTIN GIBBS, Department of Biology, Brookhaven National Laboratory, Upton, Long Island, N. Y. Metabolism of the Fungus *Rhizopus oryzae.* (Illustrated, 3¼ x 4)

11:00 *223.* MARAMOROSCH, KARL, Rockefeller Institute for Medical Research, New York, N. Y. Further Evidence for Multiplication of Aster-yellows Virus in Its Insect Vector.

MONDAY AFTERNOON, SEPTEMBER 10

Session 1. Joint Meeting of Systematic Section with the American Society of Plant Taxonomists, ***Mechanical Engineering, Room, 18.*** ERNST C. ABBE, presiding.

2:30 *224.* LLANO, GEORGE A., Air University, Maxwell AFB, Ala. Interesting Distribution of Lichens Collected on the North Slope of the Brooks Range. (Illustrated)

2:45 *225.* GIER, L. J., William Jewell College, Liberty, Mo. Shortcuts for the Herbarium of Cryptogamic Botany. (Illustrated)

2:55 *226.* BOIVIN, BERNARD, Division of Botany and Plant Pathology, Department of Agriculture, Ottawa, Ontario. The Correct Name of *Thalictrum polygamum* Muhl. (Illustrated)

3:10 *227.* WEATHERWAX, PAUL, Indiana University, Bloomington, Ind. Seedling Morphology as a Criterion in the Taxonomy of the *Gramineae.* (Illustrated)

3:25 *228.* GOULD, FRANK W., A & M College of Texas, College Station, Texas. Species Relationships in *Andropogon,* Sect. *Amphilophis.* (Illustrated)

Session 2. Teaching Section, ***Mechanical Engineering, Room 4.*** ERNEST L. STOVER, presiding.

2:30 **Symposium: Sequence of Subject Matter in General Botany.**

a. STOVER, ERNEST L., Eastern Illinois State College, Charleston, Ill. The Sequence of Topics in General Botany for Students Who Take No Other Courses in Botany and For Those Who Do.

b. CREIGHTON, HARRIET B., Wellesley College, Wellesley, Mass. The Seasons and the Sequence of Subject Matter in a General Botany Course.

c. PAGE, ROBERT M., Stanford University, Stanford, Calif. *Chlamydomonas* as an Illustration of Botanical Principles in the Elementary Botany Sequence. (Illustrated)

d. HIGINBOTHAM, NOE, State University of Washington, Pullman, Wash. Presentation and Development of Principles in a General Botany Course.

3:30 **Business Meeting of the Teaching Section.**

Session 3. Joint Meeting of the Physiological Section with American Society for Horticultural Science, the American Society of Plant Physiologists, and the Ecological Society of America. (See pages 15, 25, 49.) ***Minnesota Museum of Natural History Auditorium.*** W. N. HEISEY. presiding.

2:00 **Symposium: Why Plants Grow Where They Do.**

Session 4A. Joint Meeting of Microbiological Section with the Mycological Society of America, ***Physics, Room 133.*** W. LAWRENCE WHITE, presiding.

2:00 Address of the President. Mycological Society of America. KENNETH B. RAPER, Northern Regional Research Laboratory, U.S.D.A., Peoria, Ill. **A Decade of Antibiotics in America.** (Illustrated. 3¼ x 4)

3:00 **Business Meeting,** Microbiological Section, Botanical Society of America.

4:00 *229.* GOPALKRISHNAN. K. S., and JOHN A. JUMP, University of Notre Dame, Notre Dame, Ind. The Synergistic Action of Two Antifungal Organisms Upon Certain Fungi. (Illustrated, 3¼ x 4)

4:10 *230.* CAMPBELL. T. H.. and MYRON P. BACKUS, University of Wisconsin, Madison, Wis. An Approach to the Study of Population Patterns in *Penicillium chrysogenum* Through Cytology and Micromanipulation. (Illustrated, 2 x 2 and 3¼ x 4)

4:25 *231.* BONNER, JOHN T.. Princeton University, Princeton, N. J. Development in the Myxobacterium *Chondromyces exocatus.* (Illustrated, 3¼ x 4 and 16 mm. projector)

4:45 *232.* BACKUS, MYRON P.. and E. A. STOWELL, University of Wisconsin, Madison, Wis. Sexual Organization in Some Members of the *Xylariaceae.* (Illustrated. 3¼ x 4)

Session 4B. Joint Meeting of Microbiological Section with the Mycological Society of America, ***Physics, Room 166.*** JOSEPH C. GILMAN, presiding.

4:00 *233.* CONVERSE, RICHARD H., South Dakota State College, Brookings, S. Dak. Studies on the Physiology of *Helminthosporium gramineum* Rabh. (Illustrated, 2 x 2)

4:10 *234.* LINTHICUM, BETTY, and ARTHUR W. ZIEGLER, Florida State University, Tallahassee, Fla. Experimental Studies on *Dictyuchus pseudododictyon.* (Illustrated, 3¼ x 4)

4:20 *235.* BUTLER, EDWARD E., Plant Pathology Division, University Farm, St. Paul 1, Minn. Abnormal Germination and Development of Fungus Spores Induced by Dilute Colloidal Polonium. (Illustrated, 2 x 2)

4:30 *236.* SUSSMAN, ALFRED S., University of Michigan, Ann Arbor, Mich. Heterocyclics as Activators and Inhibitors of Ascospore Germination in *Neurospora tetrasperma.* (Illustrated, 3¼ x 4)

4:45 *237.* HASKINS, REGINALD H., National Research Council of Canada, Prairie Regional Laboratory, Saskatoon, Saskatchewan. The Biological Properties of Ustilagic Acid Produced by *Ustilago zeae* in Submerged Culture. (Illustrated, 3¼ x 4)

5:00 *238.* BLUM, ROBERT, and WILLIAM H. STAHL, Biological Laboratories, Quartermaster General Laboratories, Philadelphia, Pa. The Degradation of Cellulose Fibers by Enzymes Derived from Fungi. (Illustrated, 3¼ x 4)

5:20 *239.* STAHL, WILLIAM H., and HELMUT PESSEN, Biological Laboratories, Quartermaster General Laboratories, Philadelphia, Pa. The Mechanism of Microbiological Degradation of Plasticizers. (Illustrated, 3¼ x 4)

MONDAY EVENING, SEPTEMBER 10

8:30 **General Meeting for All Participating Societies,** American Institute of Biological Sciences, ***Northrop Auditorium.***

Federal Support of Fundamental Research in the Biological Sciences.

Address by ALAN WATERMAN, Director, National Science Foundation.

TUESDAY MORNING, SEPTEMBER 11

Concurrent Session 1–6

Session 1A. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 120.*** C. H. WADLEIGH, presiding.

9:00 *240.* GORDON, S. A., and R. P. WEBER, Argonne National Laboratory, Chicago, Ill. (B) On the Mechanism of Ionizing Radiation Effect Upon Auxin Levels in the Plant. (Illustrated, 3¼ x 4)

9:15 *241.* STAPLETON, G. E., DANIEL BILLEN, and ALEXANDER HOLLAENDER, Oak Ridge National Laboratory, Oak Ridge, Tenn. (B) Probable Mechanisms of Protective Action of Some Chemicals Against Radiation Damage. (Illustrated, 3¼ x 4)

9:30 *242.* TORREY, JOHN G., University of California, Berkeley, Calif. (P) Effects of Light on Root Growth. (Illustrated, 3¼ x 4)

9:45 *243.* LARSON, POUL, University of Chicago, Chicago, Ill. (B) Geotropism and Geo-growth-reactions in Roots of *Artemisia absinthium.* (Illustrated, 3¼ x 4)

10:00 *244.* MINSHALL, D. H., Science Service Laboratory, London, Ontario. (B) The Effect of Soil Temperature on the Growth of *Taraxacum Kok-saghyz.* (Illustrated, 3¼ x 4)

10:15 *245.* HIESEY, WILLIAM M., Carnegie Institution of Washington, Stanford, Calif. (P). Growth and Development of Different Forms of *Poa* and *Poa* Hybrids Under Controlled Temperatures. (Illustrated 3¼ x 4)

10:30 *246.* JACOBS, WILLIAM P., Princeton University, Princeton, N. J. (B) Auxin as the Hormonal Factor Normally Limiting the Differentiation of Xylem. (Illustrated, 3¼ x 4)

10:45 *247.* NITSCH, J. P., and R. H. WETMORE, Harvard University, Cambridge, Mass. (P) Study in the Origin and Distribution of Auxin in the Shoot Apex. (Illustrated, 3¼ x 4)

11:00 *248.* ZUCKER, MILTON L., Washington University, St. Louis, Mo. (P) Introduced by BARRY COMMONER. A Quantitative Study of Differentiation in Single Living Cells. (Illustrated, 3¼ x 4)

11:15 *249.* PALEC, LESLIE G., and ROBERT M. MUIR, State University of Iowa, Iowa City, Iowa. (P) Surface Activities of Plant-Growth Regulators as Measured by the Polarograph. (Illustrated, 3¼ x 4)

Session 1B. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 155.*** D. R. GODDARD, presiding.

9:00 *250.* STAFFORD, HELEN A., University of Pennsylvania, Philadelphia, Pa. (B) Enzymes Associated with a Possible Mitochondrial Fraction from Pea Seedlings. (Illustrated, 2 x 2)

9:15 *251.* MILLERD, ADELE, California Institute of Technology, Pasadena, Calif. (P) Enzymatic Activity Associated with the Particulate Components of Plant Cell Cytoplasm. (Illustrated, 2 x 2)

9:30 *252.* LATIES, GEORGE G., California Institute of Technology, Pasadena, Calif. (B) The Relationship of Osmotic Environment to Endogenous Inactivation of Mitochondrial Enzymes. (Illustrated, 3¼ x 4)

9:45 *253.* NICKELL, L. G., and M. K. BRAKKE, Brooklyn Botanic Garden, Brooklyn, N. Y. (B) Amylase Secretion by *Rumex* Virus Tumors in Vitro and the Lack of Secretion by Excised Roots of *Rumex*. (Illustrated, 3¼ x 4)

9:55 *254.* NOGGLE, G. R., Oak Ridge National Laboratory, Oak Ridge, Tenn. (B) Phosphatase Activity in Lily Anthers. (Illustrated, 3¼ x 4)

10:05 *255.* GIRTON, RAYMOND E., Purdue University, Lafayette, Ind. (B) The Effect of Certain Terminal Oxidase Inhibitors on the Respiration of Excised Maize Roots. (Illustrated, 3¼ x 4)

10:20 *256.* DOW, WILLIAM A., JR., University of Wisconsin, Madison, Wis. (B) Stimulation by Indoleacetic Acid of *Avena* Coleoptile Respiration and Its Inhibition. (Illustrated, 3¼ x 4)

10:35 *257.* HOPKINS, H. T., Bureau of Plant Industry, Beltsville, Md. (P) Inhibition of Cell Division in Plant Roots by Benzene Hexachloride and Various Enzyme Poisons. (Illustrated, 3¼ x 4)

10:50 *258.* BEEVERS, HARRY, Purdue University, Lafayette, Ind. (P) The Quantitative Effect of pH Changes on the Activity of Respiratory Inhibitors with Particular Reference to Malonate and the Responses of Maize Roots. (Illustrated, 3¼ x 4)

11:15 *259.* HANSL, N., and E. R. WAYGOOD, McGill University, Montreal, Quebec. (B) Plant Decarboxylases and Carbonic Anhydrase. (Illustrated, 3¼ x 4)

Session 1C. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 55.*** P. J. KRAMER, presiding.

9:00 *260.* CRAMER, MARIAN L., and JACK MYERS, University of Texas, Austin, Texas. (B) Replacement of CO_2 in Photosynthesis of *Euglena*. (Illustrated, 3¼ x 4)

9:15 *261.* GIBBS, MARTIN, Brookhaven National Laboratory, Upton, N. Y. (B) Distribution of C^{14} in Metabolites Formed During Weak Light Photosynthesis of Sunflower Leaves in $C^{14}O_2$. (Illustrated, 3¼ x 4)

9:25 *262.* CLENDENNING, K. A., and P. R. GORHAM, National Research Council of Canada, Ottawa, Ontario. (P) Intracellular Location of Assimilated C^{14} in Briefly Exposed Aquatic Plants. (Illustrated, 3¼ x 4)

9:40 *263.* GORHAM, P. R., and K. A. CLENDENNING, National Research Council of Canada, Ottawa, Ontario. (P) Chloride Stimulation of the Hill Reaction. (Illustrated, 3¼ x 4)

10:00 *264.* MACDOWALL, F. D. H., University of Michigan, Ann Arbor, Mich. (P) Further Studies on the Kinetics of Photolysis by Isolated Chloroplasts. (Illustrated, 3¼ x 4)

10:10 *265.* MACDOWALL, F. D. H., University of Michigan, Ann Arbor, Mich. (P) Grana and the Photolytic Activity of Isolated Chloroplast Material. (Illustrated, 3¼ x 4)

10:20 *266.* MACDOWALL, F. D. H., University of Michigan, Ann Arbor, Mich. (P) Acid Phosphatase Activity of Isolated Chloroplasts. (Illustrated, 3¼ x 4)

10:30 *267.* BASSHAM, J. A., A. A. BENSON, and MELVIN CALVIN, University of California, Berkeley, Calif. (P) The Early Intermediates of Carbon Dioxide Fixation in Photosynthesis. (Illustrated, 3¼ x 4)

10:45 *268.* BASSHAM, J. A., A. A. BENSON, and MELVIN CALVIN, University of California, Berkeley, Calif. (P) The Path of Carbon in Photosynthesis. (Illustrated, 3¼ x 4)

11:00 *269.* ARNON, DANIEL I., University of California, Berkeley, Calif. (B) An Extracellular Photosynthetic System from Green Leaves. (Illustrated, 3¼ x 4)

11:15 *270.* SPIKES, JOHN D., University of Utah, Salt Lake City, Utah. (P) The Back-reaction in the Photolysis of Water by Illuminated Chloroplast Fragments. (Illustrated, 3¼ x 4)

Session 1D. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 80.*** T. C. BROYER, presiding.

9:00 *271.* NORRIS, W. E., JR., Southwest Texas State Teachers College, San Marcos, Texas. (P) Nitrogen and Phosphate Distribution in the Onion Root Tip. (Illustrated, 3¼ x 4)

9:10 *272.* AVERY, GEORGE S., JR., Brooklyn Botanic Garden, Brooklyn, N. Y., and FREDERICK ENGEL, Carlsberg Laboratory, Copenhagen, Denmark. (B) Total N_2 Per Cell in Relation to Age, Position, and Volume in *Avena* Coleoptile Cells. (Illustrated, 2 x 2)

9:20 *273.* RABIDEAU, GLENN S., University of Texas, Austin, Texas. (B) Nitrogen and Amino Acid Content of Various Parts of *Andropogon ischaemum*. (Illustrated, 3¼ x 4)

9:35 *274.* THOMPSON, J. F., and F. C. STEWARD, Cornell University, Ithaca, N. Y. (B) The Nitrogenous Composition of Tissue Cultured from the Potato Tuber and the Carrot Root. (Illustrated, 3¼ x 4)

9:50 *275.* SINGER, S. J., L. E. EGGMAN, and S. G. WILDMAN, California Institute of Technology, Pasadena, Calif., and the University of California, Los Angeles, Calif. (B) Studies on the Isolation and Properties of a High Molecular Weight Cytoplasmic Nucleoprotein Found in Various Plant Leaves.

10:10 *276.* WILSON, D. G., G. KROTKOV, and G. B. REED, Queen's University, Kingston, Ontario. (B) Biosynthesis of Radioactive Asparagine. (Illustrated, 3¼ x 4)

10:20 *277.* MARSHALL, RICHARD, ROBERT MACVICAR, and GLEN HALLMARK, Oklahoma Agricultural Experiment Station, Stillwater, Okla., and Texas A. & M. College, College Station, Texas. (P) Studies on Nitrate Reduction Using N^{15}. (Illustrated, 3¼ x 4)

10:35 *278.* WALL, JOSEPH S., University of Wisconsin, Madison, Wis. (P) Biological Nitrogen Fixation by Photosynthesizing Bacteria. (Illustrated, 3¼ x 4)

10:50 *279.* CAMUS, G. C., S. G. WILDMAN, and J. BONNER, California Institute of Technology, Pasadena, Calif. (B) Comparative Study of the Soluble Proteins of Crown Gall and Normal Tissues of Sunflower Cultivated in Vitro. (Illustrated, 3¼ x 4)

11:10 *280.* HILDEBRANDT, ALBERT C., University of Wisconsin, Madison, Wis. (B) The Influence of Concentration of Alcohols on Growth in Vitro of Marigold, Paris-Daisy, Periwinkle, Sunflower, and Tobacco Tissue. (Illustrated, 3¼ x 4)

11:25 *281.* HENDERSON, JAMES H. M., Carver Foundation, Tuskegee Institute, Ala. (P) The Indefinite Culture of Normal Sunflower Callus Tissue Using a Special Supplement Mixture. (Illustrated, 3¼ x 4)

11:40 *282.* HENDERSON, JAMES H. M., and FRED R. WEST, JR., Carver Foundation, Tuskegee Institute, Ala. (P) Preliminary Report on a "Neutral Substance" Produced by Sunflower Tissue. (Illustrated, 3¼ x 4)

Session 2. General Section, ***Mechanical Engineering, Room 4.*** SAMUEL L. MEYER, presiding.

9:00 *283.* CHEADLE, V. I., and K. ESAU, University of Rhode Island, Kingston, R. I., and University of California, Davis, Calif. Comparative Studies on Secondary Phloem. I. The Approach and Techniques. (Illustrated)

9:15 *284.* ESAU, K., and V. I. CHEADLE, University of California, Davis, Calif., and University of Rhode Island, Kingston, R. I. Comparative Studies of Secondary Phloem. II. The significance of Divisions in Certain Cambia Derivatives. (Illustrated)

9:30 *285.* GLOCK, WALDO S., and R. A. STUDHALTER, Macalester College, St. Paul, Minn., and Texas Technological College, Lubbock, Texas. Growth Rhythms and Cambial Activity. (Illustrated)

9:45 *286.* SHAPIRO, SEYMOUR, University of Michigan, Ann Arbor, Mich. Studies on the Direction of the Phyllotaxic Spiral. (Illustrated)

9:55 *287.* SHAPIRO, SEYMOUR, University of Michigan, Ann Arbor, Mich. Polarity Studies of Adventitious Bud Production. (Illustrated)

10:10 *288.* LANGDON, LADEMA M., Goucher College, Baltimore, Md. Comparative Survey of Inflorescence Characters in the *Castaneae.* (Illustrated)

10:25 *289.* MORLEY, THOMAS, University of Minnesota, Minneapolis, Minn. Trends of Stamen Modification in the *Memecyleae (Melastomaceae).*

10:40 *290.* PALSER, BARBARA F., University of Chicago, Chicago, Ill. Megasporogenesis and Megagametophyte Development in the *Andromedeae.* (Illustrated)

10:50 *291.* FERNANDEZ-MORAN, H., and A. ORVILLE DAHL, Institute for Cell Research, Karolinska Institutet, Stockholm, Sweden, and University of Minnesota, Minneapolis, Minn. Electron Microscopy of the Pollen Grain Wall. (Illustrated)

11:00 *292.* DERMEN, HAIG, Plant Industry Station, USDA, Beltsville, Md. Cytochimeras and Ontogeny in Apple. (Illustrated)

11:10 *293.* LARUE, CARL D., University of Michigan, Ann Arbor, Mich. Comparative Development of Nut-Fruit and Pedicel-Fruit in *Anacardium occidentale.* (Illustrated)

11:20 *294* BURCH, CHARLES, Cornell University, Ithaca, N. Y. The Orientation of Carpellary Vascular Bundles. (Illustrated)

11:30 *294a.* SCOTT, FLORA M., University of California, Los Angeles, Calif. Pits, Plasmodesmata, and the Beginning of Internal "Suberization" in Apical Meristems. (Illustrated)

Session 3. Paleobotanical Section, ***Ford Hall, Room 15.*** HARLAN P. BANKS, presiding.

9:00 *295.* MORGAN, JEANNE, University of Illinois, Urbana, Ill. A New Fern Stem. (Illustrated)

9:15 *296.* DELEVORYAS, THEODORE. University of Illinois, Urbana, Ill. Preliminary Report on a Coenopterid Fern. (Illustrated)

9:30 *297.* SCHOPF, JAMES M., USGS Coal Geology Laboratory, Ohio State University, Columbus, Ohio. Coal-Ball Studies. I. The Hamlin-Magoffin Flora of Eastern Kentucky. (Illustrated)

(Continued on page 41)

THE • UNIVERSITY OF MINNESOTA

MINNEAPOLIS

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THE FOLLOWING PICTORIAL GUIDE WILL ASSIST
IN LOCATING BUILDINGS WHERE SOCIETIES MEET

CAMPUS VIEW, looking south from the Northrop Auditorium end of the campus, toward Coffman Memorial Union (far right). First building on left is PHYSICS where the mycologists and microbiologists will meet. Beyond, on the left, is VINCENT HALL where the horticulturists will have some of their meetings. On the far left is FORD HALL where the plant physiologists will meet.

COFFMAN MEMORIAL UNION will be the center of campus meeting activities. Here, in the main ballroom, will be the Biological Sciences Exhibit, the Biologists' Smoker, the Main Registration and Information Center, the Visible Index, and the AIBS Office. Society council and committee meetings will be held in conference rooms reserved for the purpose.

MECHANICAL ENGINEERING, adjacent to the Physics Building, will be the scene of general botany and taxonomy meetings and a few sessions of the horticulturists.

MINNESOTA MUSEUM OF NATURAL HISTORY, two blocks north of the Auditorium, will provide meeting rooms for the ecologists and for a few special symposia of the naturalists and plant physiologists.

FORD HALL, diagonally opposite the Coffman Memorial Union, will house the plant physiologists as well as a few meetings of the horticulturists, human geneticists, and bryologists.

PIONEER HALL will provide dormitory rooms for family groups and some single men. It is three blocks east and three blocks south of the Coffman Memorial Union.

COMSTOCK HALL will provide dormitory rooms for women. It is adjacent to the Coffman Memorial Union.

NORTHROP AUDITORIUM will provide ample seating facilities for the general meeting Monday evening, to which all participating societies and their guests are invited.

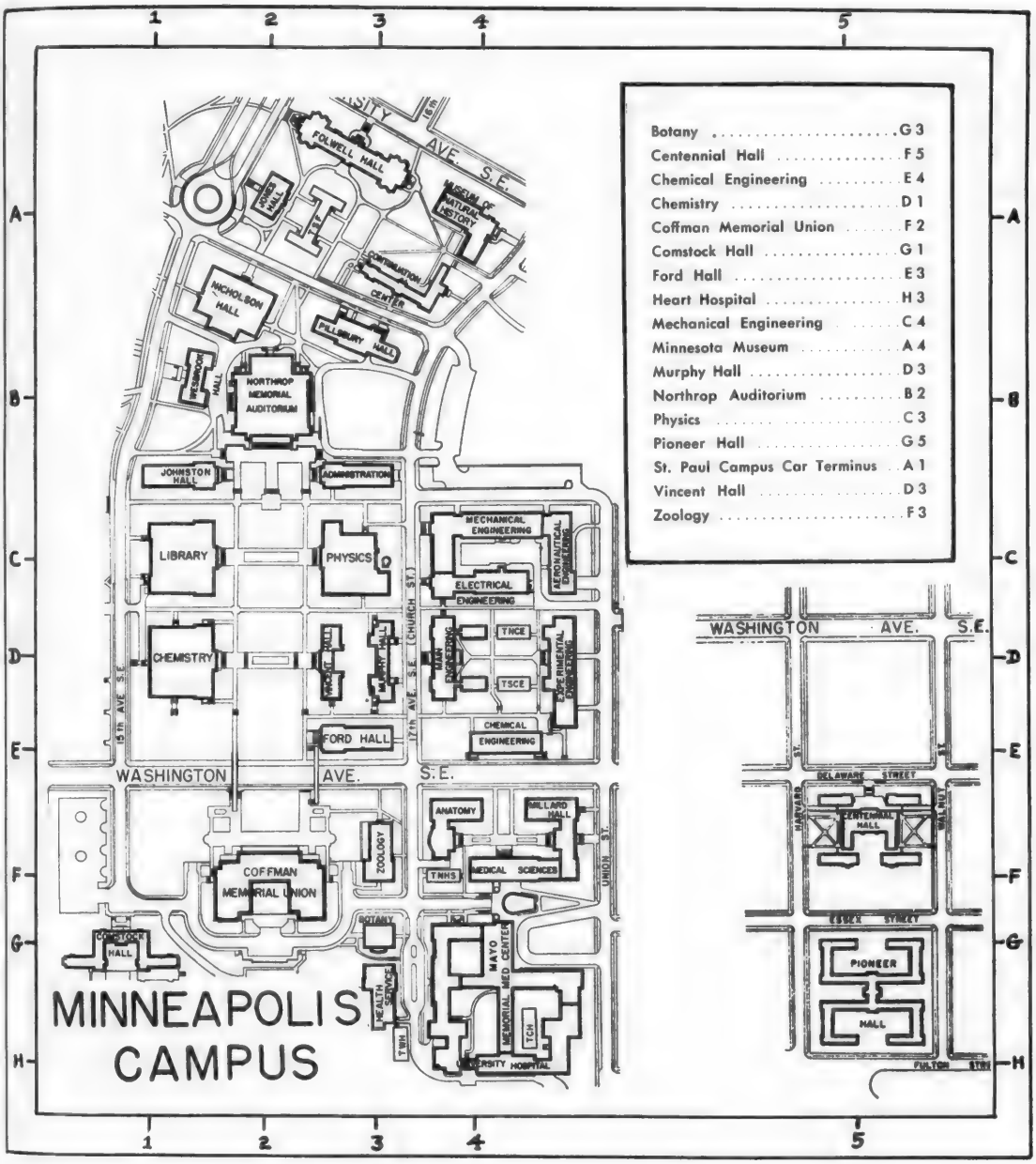
CHEMISTRY, with an auditorium seating over 500, will accommodate the large sessions of the horticulturists.

ZOOLOGY, adjacent to the Coffman Memorial Union, will be the locale of most of the geneticists' meetings.

BOTANY, also adjacent to the Coffman Memorial Union, will provide facilities for other geneticists' meetings.

CHEMICAL ENGINEERING has a meeting room assigned to the botanists' teaching section.

GUIDE MAP TO THE MEETING AREA



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9:50 *298.* SCHEMEL, MART P., and AUREAL T. CROSS, West Virginia Geological Survey, Morgantown, W. Va. Preliminary Account of Spore Assemblages of Monongahela-Dunkard Coals. (Illustrated)

10:10 *299.* CUATRECASAS, JOSE, and THEODOR JUST, Chicago Natural History Museum, Chicago, Ill. Synopsis of Fossil and Living *Humiriaceae.*

10:20 *300.* BEYER, ARTHUR F., and REGINALD G. RYAN, Midwestern University, Wichita Falls, Texas. A Unique Piece of Fossil Wood from North Central Texas. (Illustrated)

10:30 *301.* ABBOTT, MAXINE L., University of Cincinnati, Cincinnati, Ohio. Revision of the Genus *Oligocarpia.* (Illustrated)

10:45 *302.* BROWN, CLAIR A., Louisiana State University, Baton Rouge, La. Taxonomic Importance of the Morphological Changes Produced by Boiling Fern Spores in Potassium Hydroxide. (Illustrated)

Session 4. Joint Meeting of Systematic Section with the American Society of Plant Taxonomists and the Ecological Society of America, ***Mechanical Engineering, Room 18,*** ERNST C. ABBE, presiding.

9:00 **Symposium: Vegetation of the Upper Great Lakes Region.**

a. ABBE, ERNST C., University of Minnesota, Minneapolis, Minn. The Subarctic Element in the Flora of the North Shore of Lake Superior.

b. FASSETT, N. C., Gray Herbarium, Harvard University, Cambridge, Mass. The Plants of the Central Great Lakes Region.

c. MCVAUGH, ROGERS, University of Michigan, Ann Arbor, Mich. Distribution Patterns and Plant Associations of Some Critical Species of Northern Lake Michigan and Lake Huron.

d. RAYMOND, MARCEL, Montreal Botanical Garden, Montreal, Quebec. Relations Between the East-Canadian Disjunct Floras and Those of the Great Lakes.

Session 5. Teaching Section, ***Chemical Engineering Room 240.*** ERNEST L. STOVER, presiding.

9:00 *303.* LEWIS, RALPH W., Michigan State College, East Lansing, Mich. The Publication of Papers on the Teaching of Botany (Progress Report of the Committee on the Publication of Botany Teaching Papers).

9:25 *304.* GREENFIELD, SYDNEY S., Newark Colleges of Rutgers University, Newark, N. J. The Status of Botany (Progress Report of the Committee to Study the Role of Botany in American Colleges and Universities).

10:00 *305.* PALMQUIST, EDWARD M., University of Missouri, Columbia, Mo. Should Academic Botanists Cooperate with Teachers in Other Fields in Conducting General Education Courses in Biological Science?

10:20 *306.* ROUFFA, ALBERT S., University of Illinois, Navy Pier, Chicago, Ill. Survival of Botany Within a Biological Framework.

10:40 *307.* GRIES, G. A., G. B. CUMMINS, J. H. LEFFORGE, S. N. POSTLETHWAIT, and F. STEARNS, Purdue University, Lafayette, Ind. Plant Science for Agricultural Students. (Illustrated)

10:50 *308.* O'HANLON, SISTER MARY ELLEN, Rosary College, River Forest, Ill. Botany, A Cultural Subject.

11:00 *309.* HALL, BENEDICT A., State Teachers College, Cortland, N. Y. The Role of Botany in General Education.

Session 6A. Joint Meeting of Microbiological Section with the Mycological Society of America, ***Physics, Room 166.*** W. LAWRENCE WHITE, presiding.

9:00 *310.* BENEKE, EVERETT S., Michigan State College, East Lansing, Mich. Relationship of Fungus Allergies, Airborne Spores, and Fungi in Raspberry Fruits. (Illustrated, 2 x 2)

9:10 *311.* CHILD, GEORGE P., Albany Medical College, Albany, N. Y. Paneolus Intoxication and the Failure of Coprini to Sensitize Man to Ethyl Alcohol. (Illustrated, 3¼ x 4)

9:25 *312.* MARWIN, RICHARD M., University of North Dakota School of Medicine, Grand Forks, N. Dak. Electrophoretic Patterns of Fungus Extracts. (Illustrated, 3¼ x 4)

9:45 *313.* GEORG, LUCILLE K., Communicable Disease Center, Federal Security Agency, Atlanta, Ga. *Trichophyton roseum* and *T. gallinae,* Nutritional and Morphological Studies. (Illustrated, 2 x 2)

10:05 *314.* UMANZIO, CARL B., Kirksville College of Osteopathy and Surgery, Kirksville, Mo. Further Observations on *Histoplasma capsulatum* with Brief Notes Relating to Darling's Histoplasmosis. (Illustrated, 2 x 2)

10:40 *315.* COUCH, JOHN N., University of North Carolina, Chapel Hill, N. C. Differentiation of Species in *Actinoplanes.* (Illustrated, 2 x 2)

11:00 *316.* AJELLO, LIBERO, U. S. Public Health Service, Atlanta, Ga. A Mycological Slide Culture Technique. (Illustrated, film strip)

Session 6B. Joint Meeting of Microbiological Section with the Mycological Society of America, ***Physics, Room 133.*** KENNETH B. RAPER, presiding.

9:00 *317.* FISCHER, GEORGE W., Washington State College, Pullman, Wash. Problems of Species Concept in the Smut Fungi. (Illustrated 2 x 2)

9:30 *318.* BUTLER, EDWARD E., University of Minnesota, University Farm, St. Paul 1, Minn. *Rhizoctonia solani* as a Parasite of Fungi. (Illustrated, 2 x 2)

9:40 *319.* SHOEMAKER, ROBERT A., Ontario Agricultural College, Guelph, Ontario. The Location of *Streptomyces* Mycelium in Potato Scab Lesions.

10:00 *320.* FRITZ, CLARA W., Forest Products Laboratory, Ottawa, Ontario. Brown Stain in Red Pine Sapwood Caused by *Cytospora* sp. (Illustrated, 3¼ x 4)

10:15 *321.* NOBLES, MILDRED K., Division of Botany and Plant Pathology, Science Service Building, Ottawa, Ontario. Identification of Haploid Isolates from Decay in Trees. (Illustrated, 3¼ x 4)

10:30 *322.* LLANO, GEORGE A., Research Studies Institute, Air University, Maxwell AFB, Ala. Microflora of Soil Samples from Arctic Alaska. (Illustrated, 2 x 2)

TUESDAY AFTERNOON, SEPTEMBER 11

Concurrent Sessions 1–5

1:30 **Session 1.** Business Meeting of the Botanical Society of America, Inc., ***Physics, Auditorium.***

2:30 **Session 2.** General Section, ***Mechanical Engineering, Room 4.*** SAMUEL L. MEYER, presiding.

2:30 *323.* WILSON, KATHERINE S., and VICTOR M. CUTTER, JR., Yale University, New Haven, Conn. Distribution of Acid Phosphatases in the Developing Fruit of *Cocos nucifera.* (Illustrated)

2:45 *324.* CUTTER, VICTOR M., JR., and KATHERINE S. WILSON, Yale University, New Haven, Conn. Isolation and Cultural Experiments with the Nuclei of the Endosperm of *Cocos nucifera.* (Illustrated)

3:00 *325.* WINTER, JOHN M., University of South Dakota, Vermillion, S. Dak. The Nucleolus Organizer in Root-tip Cells of Hyacinth. (Illustrated)

3:15 *326.* BATTAGLIA, EMILIO, Instituto Botanico della Universita, Pisa, Italy. Dichromosome (diplochromosome) and Tetra-chromosome Mitosis in Root Tips of *Scilla peruviana.* (Illustrated)

3:25 *327.* BATTAGLIA, EMILIO. Instituto Botanico della Universita, Pisa, Italy. Meiotic Phenomena in Somatic Tissue of *Sambucus.* (Illustrated)

3:35 *328.* BATTAGLIA, EMILIO, Instituto Botanico della Universita, Pisa, Italy. Semigamy in *Rudbeckia* sp. (compositae).

3:45 *329.* ELIAS, MAXIM K., University of Nebraska, Lincoln, Nebr. History of American Prairie and Its Grasses. (Illustrated)

4:15 *330.* WILLIAMS, LOUIS G., Furman University, Greenville, S. C. Organisms on the Reefs off the Carolinas. (Illustrated)

Session 3. The Physiological Section Is Invited to the Symposium Sponsored by the American Society of Plant Physiologists, ***Natural History Museum Auditorium.***

2:30 **Symposium: Organic Acid Metabolism in Higher Plants.** See p. 26.

Session 4. Paleobotanical Section, ***Ford Hall, Room 15.***

2:30 **Symposium: Phylogeny and the Fern-Pteridosperm Complex.** HARLAN P. BANKS, presiding.

2:30 *331.* JUST, THEODOR, Chicago Natural History Museum, Chicago, Ill. The Geographical Distribution of Fossil Ferns and Pteridosperms. (Illustrated)

2:50 *332.* BECK, CHARLES B., and HARLAN P. BANKS, Cornell University, Ithaca, N. Y. The Primary Xylem and Phloem in *Callixylon.* (Illustrated)

3:00 *333.* LECLERCQ, S., Laboratoire de Paléontologie Végétale, Université de Liège, Liège, Belgium. (Paper to be read by American Colleague.) An Upper Devonian Zygopterid Showing *Clepsydraceae* and *Etapteridaceae* Collective Features. (Illustrated)

3:20 *334.* BAXTER, ROBERT W., University of Kansas, Lawrence, Kans. The Coal Age Flora of Kansas II: On the Relation Between *Etapteris, Scleropteris,* and *Botrychioxylon.* (Illustrated)

3:35 *335.* TRYON, ROLLA M., JR., Missouri Botanical Garden, St. Louis, Mo. Phylogeny of the Filicales. (Illustrated)

4:00 *336.* WAGNER, WARREN H., JR., Harvard University, Cambridge, Mass. Evidence for an Enation Prototype of the Fern Leaf. (Illustrated)

4:20 *337.* STEWART, WILSON N., and THEODORE DELEVORYAS, University of Illinois, Urbana, Ill. Bases for the Phylogeny of the *Medullosaceae.* (Illustrated)

4:40 *338.* ABBOTT, MAXINE L., University of Cincinnati, Cincinnati, Ohio. Paleozoic "Ferns" in Color. (Illustrated)

5:00 Round-Table Discussion of "Phylogeny and Fern-Pteridosperm Complex."

Session 5. Joint Meeting of Systematic Section with the American Society of Plant Taxonomists, ***Mechanical Engineering, Room 18.*** ERNST C. ABBE, presiding.

2:30 *339.* LAKELA, OLGA, University of Minnesota, Duluth, Minn. Floristic Affinities in St. Louis County, Minnesota. (Illustrated)

2:45 *340.* THORNE, ROBERT F., State University of Iowa, Iowa City, Iowa. Maritime Vegetation of the Tampa Bay Region of Florida. (Illustrated)

3:00 *341.* ISELY, DUANE, Iowa State College, Ames, Iowa. *Desmodium paniculatum* and *D. viridiflorum* (Illustrated)

3:15 *342.* COX, HIDEN T., Virginia Polytechnic Institute, Blacksburg, Va. Contributions to the Knowledge of the *Ericoideae.* (Illustrated) Discussion of Papers.

WEDNESDAY MORNING, SEPTEMBER 12

Concurrent Sessions 1–4

Session 1A. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 155.*** C. H. WADLEIGH, presiding.

9:00 *343.* SPARROW, ARNOLD H., and ERIC CHRISTENSEN, Brookhaven National Laboratory, Upton, Long Island, N. Y. (B) Supernumerary Bud Formation and Related Morphological Aberrations Induced by Chronic Gamma Irradiation of *Tradescantia paludosa.* (Illustrated, 3¼ x 4)

9:15 *344.* REINHART, JUSTIN H., University of Illinois, Urbana, Ill. (B) Relation of Vegetative Growth to Reproduction in Biloxi Soybeans. (Illustrated, 2 x 2)

9:25 *345.* MONTGOMERY, F. H., Ontario Agricultural College, Guelph, Ontario. (B) Boron and Its Relation to Flowering, Pollen Tube Development, and Seed Production of Alsike Clover.

9:35 *346.* BROWN, WALTER V., The University of Texas, Austin, Texas. (B) The Relation of Soil Moisture to Cleistogamy in *Stipa leucotricha.* (Illustrated, 3¼ x 4) (To be read by G. S. Rabideau)

9:50 *347.* LEOPOLD, A. C., Purdue University, Lafayette, Ind. (B) The Role of Leaves in Tomato Fruit-set. (Illustrated, 2 x 2)

10:00 *348.* KLEIN, W. H., and A. C. LEOPOLD, Purdue University, Lafayette, Ind. (P) The Role of Organic Acids in Flower Initiation. (Illustrated, 2 x 2)

10:15 *349.* NITSCH, J. P., EDWIN B. KURTZ, JAMES L. LIVERMAN, and F. W. WENT, Harvard University, Cambridge, Mass. (P) The Phasic Development of Sex Expression in *Cucurbita pepo* and Its Variations with Environment. (Illustrated, 3¼ x 4)

10:25 *350.* ROBERTS, R. H., and B. ESTHER STRUCKMEYER, University of Wisconsin, Madison, Wis. (P) The Induction and Floral Development of Biloxi Soybean. (Illustrated, 3¼ x 4)

10:35 *351.* MCALISTER, DEAN F., U. S. Regional Soybean Laboratory, Urbana, Ill. (P) Effect of Temperature on Growth and Reproduction in Soybeans. (Illustrated, 2 x 2)

10:50 *352.* GARDNER, F. P., and W. E. LOOMIS, Iowa State College, Ames, Iowa. (P) Thermal Induction in Grasses. (Illustrated, 2 x 2)

Session 1B. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 55.*** D. R. GODDARD, presiding.

9:00 *353.* HIGINBOTHAM, NOE, State College of Washington, Pullman, Wash. (B) Studies of Salt Uptake and Retention as Related to Water Relations in Excised Tissues. (Illustrated, 3¼ x 4)

9:15 *354.* KELLY, SALLY M., Marine Biological Laboratory, Woods Hole, Mass. (B) Respiration and Iodine Uptake in the Brown Algae. (Illustrated, 3¼ x 4)

9:25 *355.* BLINKS, L. R., and R. L. AIRTH, Stanford University, Pacific Grove, Calif. (B) Role of Electro-osmosis in Living Cells and Roots. (Illustrated, 3¼ x 4)

9:40 *356.* EPSTEIN, EMANUEL, and CLARENCE E. HAGEN, U.S.D.A., Plant Industry Station, Beltsville, Md. (P) A Kinetic Study of the Absorption of Alkali Metal Ions. (Illustrated, 3¼ x 4)

9:45 *357.* DAVIS, DONALD E., Oak Ridge, Tenn. (P) The Effect of Manganese Concentration on the Absorption of Iron 55 by *Arachis hypogaea.*

10:00 *358.* KRAMER, PAUL J., KARL M. WILBUR, and HERMAN H. WIEBE, Duke University, Durham, N. C. (P) Longitudinal Gradients in Accumulation of P^{32} by Roots. (Illustrated, 3¼ x 4)

10:10 *359.* LONG, WILLIAM G., University of Missouri, Columbia, Mo. (P) (Introduced by J. Levitt.) Ion Absorption Studies on Potato Tuber Slices with Ca^{45}. (Illustrated, 3¼ x 4)

10:25 *360.* CRUMMETT, DUANE O., University of California at Los Angeles, Los Angeles, Calif. (P) The Effect of the Iron and Manganese Content of the Substrate Upon Growth, Mineral Absorption, and Redox Potentials of the Expressed Sap of Oats and Tomatoes. (Illustrated, 2 x 2)

10:40 *361.* CRUMMETT, DUANE O., University of California at Los Angeles, Los Angeles, Calif. (P) The Use of Metaphosphate in Nutritional Research. (Illustrated, 2 x 2)

Session 1C. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 80.*** K. V. THIMANN, presiding.

9:00 *362.* POWELL, ROBERT D., University of Florida, Gainesville, Fla. (P) Effect of Grinding of Plant Tissue on the Estimation of Starch and Dextrin. (Illustrated, 3¼ x 4)

9:15 *363.* ZBINOVSKY, VLADIMIR, University of Wisconsin, Madison, Wis. (P) Metabolism of C^{14} Labeled Organic Acids in Tobacco Leaves. (Illustrated, 3¼ x 4)

9:30 *364.* KHYM, J. X., and L. P. ZILL, Oak Ridge National Laboratory, Oak Ridge, Tenn. (P) (Introduced by G. R. Noggle.) The Separation of Sugars by Ion Exchange. (Illustrated, 3¼ x 4)

9:45 *365.* NOGGLE, G. R., and L. P. ZILL, Oak Ridge National Laboratory, Oak Ridge, Tenn. (P) Application of Ion-exchange Methods to the Quantitative Analysis of Sugars in Plant Extracts. (Illustrated, 3¼ x 4)

10:00 *366.* BANDURSKI, ROBERT S., and BERNARD AXELROD, California Institute of Technology, Pasadena, Calif. (P) Paper Chromatographic Separation of Some Phosphorylated Esters of Glycolysis. (Illustrated, 3¼ x 4)

10:15 *367.* AXELROD, BERNARD, and ROBERT S. BANDURSKI, U.S.D.A., Albany, Calif., and California Institute of Technology, Pasadena, Calif. (P) Enzymatic Formation of an Adenosine Triphosphate-like Substance by Pea Meal Extract.

10:30 *368.* MOORE, RUFUS H., University of Nebraska, Lincoln, Nebr. (P) Effect of Maleic Hydrazide on the Transpiration and Percentage of Dry Matter in Maize. (Illustrated. 2 x 2)

10:45 *369.* HERNÁNDEZ-MEDINA, ERNESTO, Agricultural Experiment Station, Rio Piedras, Puerto Rico. (P) The Beneficial Effect of Filter Press Cake on Pineapple Growth, Development, and Production. (Illustrated, 2 x 2)

Session 2. General Section, ***Mechanical Engineering, Room 4.*** SAMUEL L. MEYER, presiding.

9:00 *370.* WETMORE, RALPH H., and GEORGES MOREL, Harvard University, Cambridge, Mass. The Effect of Nutrition on Gametophytes of *Lycopodium* and *Selaginella* Grown in Vitro. (Illustrated)

9:10 *371.* TAYLOR, J. HERBERT, University of Tennessee, Knoxville, Tenn. Autoradiographic Measurements of Desoxypentose Nucleic Acid (DNA) Synthesis During the Mitotic and Meiotic Cycles. (Illustrated)

9:25 *372.* STEEVES, TAYLOR A., Harvard University, Cambridge, Mass. The Relation of Auxin Production and Distribution to Morphogenesis in *Osmunda cinnamomea.* (Illustrated)

9:40 *373.* STEEVES, TAYLOR A., Harvard University, Cambridge, Mass. Morphogenetic Studies in *Osmunda cinnamomea.* (Illustrated)

10:00 *374.* HANSEN, AGNES, University of Minnesota, Minneapolis, Minn. The Expression of the Gene, Dwarf–1, During the Development of the Seedling Shoot in Maize. (Illustrated)

10:15 *375.* RIDDELL, ROBERT T., Ontario Agricultural College, Guelph, Ontario. Some Factors Affecting Fruit-set of Sweet Cherries. *(Prunus avium)* in the Niagara Peninsula. (Illustrated)

10:35 *376.* WHALEY, W. GORDON, The University of Texas, Austin, Texas. Certain Characteristics of Reciprocal Tomato-tobacco Grafts. (Illustrated)

10:45 *377.* LARUE, CARL D., and THOMAS J. MUZIK, University of Michigan, Ann Arbor, Mich., and Federal Experiment Station, Mayaguez, Puerto Rico. The Rooting of Mangrove Seedlings. (Illustrated)

10:55 *378.* STEARNS, F. W., G. A. GRIES, and R. M. CALDWELL, Purdue University Agricultural Experiment Station, Lafayette, Ind. Morphological Anomalies in Wheat Associated with Incomplete Vernalization. (Illustrated)

11:10 *379.* GAERTNER, ERIKA E., McMaster University, Hamilton, Ontario. The Host Relationship of Some Compositae and the Dodder *Cuscuta europea.* (Illustrated)

11:20 *380.* TRYON, KATHARINE, University of Michigan, Ann Arbor, Mich. Root Tumors on Seedlings of *Nicotiana affinis.* (Illustrated)

11:30 *381.* BECK, EDWIN G., University of Georgia, Athens, Ga. Factors Affecting the Formation of the Elliptical Gall on *Solidago* Stems by the Larvae of *Gnoriomoschema gallaesolidaginis.* (Illustrated)

Session 3. Paleobotanical Section, ***Ford Hall, Room 15.*** HARLAN P. BANKS, presiding.

9:00 *382.* HANSEN, HENRY P., Oregon State College, Corvallis, Ore. Postglacial Forest in Southwestern Yukon Territory. (Illustrated)

9:15 *383.* CLISBY, KATHRYN H., Oberlin College, Oberlin, Ohio. A Preliminary Report of Fossil Pollen of the Pleistocene in Mexico and New Mexico. (Illustrated)

9:30 *384.* TRAVERSE, ALFRED, Harvard University, Cambridge, Mass. The Pollen and Spores of the Brandon Lignite. (Illustrated)

9:45 *385.* ANDREWS, HENRY N., JR., Washington University, St. Louis, Mo. A Generic Index of Fossil Plant Names.

9:55 *386.* ABBOTT, MAXINE L., University of Cincinnati, Cincinnati, Ohio. Demonstration: A Simple Paleobotanical Transfer Technique.

10:00 **Business Meeting** of the Paleobotanical Section.

Session 4. Joint Meeting of Microbiological Section with the Mycological Society of America. ***Physics, Room 133.*** KENNETH B. RAPER, presiding.

9:00 *387.* ROWELL, J. B., University Farm, St. Paul 1, Minn. The Mutagenic Action of Dilute Colloidal Polonium on Fungi. (Illustrated 2 x 2)

9:10 *388.* PAPAZIAN, H. P., Department of Botany, University of Chicago, Chicago 37, Ill. Properties of Heterokaryons in *Schizophyllum.* (Illustrated, 3¼ x 4)

9:25 *389.* ROSHAL, JAY Y., Department of Botany, University of Chicago, Chicago 37, Ill. Incompatibility Factors in a Population of *Schizophyllum commune.* (Illustrated, 2 x 2)

9:35 *390.* RAPER, JOHN R., University of Chicago, Chicago, Ill. Heterokaryosis and Mutagenesis in *Schizophyllum.* (Illustrated, 2 x 2)

10:00 *391.* WHEELER, H. E., Louisiana State University, Baton Rouge, La. A Dwarf-spored Mutant of *Glomerella.* (Illustrated, 3¼ x 4)

10:15 *392.* LINDGREN, CARL C., Southern Illinois University, Carbondale, Ill. Multi-spored Asci in *Saccharomyces.* (Illustrated, 3¼ x 4)

10:35 *393.* WICKERHAM, LYNFORD J., and KERMIT BURTON, Northern Regional Research Laboratory, U.S.D.A., Peoria, Ill. Occurrence of Yeast Mating Types in Nature.

10:50 *394.* ZIEGLER, ARTHUR W., Florida State University, Tallahassee, Fla. A Preliminary Report of Meiosis in *Achlya recurva* and *Thraustotheca primoachlya.* (Illustrated, 3¼ x 4)

WEDNESDAY AFTERNOON, SEPTEMBER 12

Concurrent Sessions 1–2

Session 1A. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 55.*** C. H. WADLEIGH, presiding.

2:00 *395.* MINARIK, C. E., D. READY, and D. BRADBURY, Camp Detrick, Frederick, Md. (B) Albinism Induced by Substituted Benzoic Acids. (Illustrated, 3¼ x 4)

2:15 *396.* LEE, ADDISON E., University of Texas, Austin, Texas. (B) The Relation of Vitamin C to Seedling Organ Growth. (Illustrated, 3¼ x 4)

2:30 *397.* ELLIOTT, B. B., Purdue University, Lafayette, Ind. (P) The Relation of Photoperiod to Respiration in Long and Short Day Plants.

2:40 *398.* WITHROW, R. B., L. PRICE, V. SCHOCKEN, and V. ELSTAD, Smithsonian Institution, Washington, D. C. (P) Pigment Synthesis Associated with Photomorphogenesis in Bean, Corn, and Oat Seedlings. (Illustrated, 3¼ x 4)

3:00 *399.* BORTHWICK, H. A., S. B. HENDRICKS, and M. W. PARKER, U.S.D.A., Plant Industry Station, Beltsville, Md. (P) Action Spectrum for Inhibition of Stem Growth in Dark-grown Seedlings of Albino and Non-albino Barley *(Hordeum vulgare).* (Illustrated, 3¼ x 4)

3:10 *400.* MAYBERRY, B. D., and H. B. TUKEY, Michigan State College, East Lansing, Mich. (P) The Relation Between Embryo and Pericarp Development in *Prunus* As Indicated by Radioactive Carbon. (Illustrated, 2 x 2)

3:25 *401.* MANN, LOUIS K., University of California, Davis, Calif. (P) Factors Affecting Fruit-set Following Hand Pollination in the Cantaloupe.

3:40 *402.* BIALE, J. B., University of California, Los Angeles, Calif. (P) Oxidative Processes in Citrus Fruits During Development. (Illustrated, 3¼ x 4)

3:50 *403.* DANA, MALCOLM N., Iowa State College, Ames, Iowa. (P) Dwarfing of Apple. (Illustrated, 2 x 2)

4:05 *404.* TURRELL, F. M., and F. M. SCOTT, University of California, Los Angeles, Calif. (P) The Relation of Buffer Capacity to Growth of Sulphur-dusted Citrus Leaves. (Illustrated, 3¼ x 4)

4:15 *405.* SAVAGE, D. A., E. H. MCILVAIN, and J. E. WEBSTER, Oklahoma A & M College, Stillwater, Okla. (P) Organic Root Reserves in Range Brush in Relation to Control. (Illustrated, 3¼ x 4)

Session 1B. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 80.*** D. R. GODDARD, presiding.

2:00 *406.* WITTWER, S. H., Michigan State College, East Lansing, Mich. (P) A Method for the Continuous Recording of the Rate of Absorption of the Radionuclides in Plants. (Illustrated, 3¼ x 4)

2:10 *407.* WALLIHAN, E. F., University of California Citrus Experiment Station, Riverside, Calif. (B) Some Factors Affecting the Critical Percentage of Phosphorus in Plant Tissues. (Illustrated, 3¼ x 4)

2:25 *408.* CRANE, F., University of Rochester, Rochester, N. Y., and F. C. STEWARD, Cornell University, Ithaca, N. Y. (P) Some Symptoms of Mineral Deficiency as Shown by Paper Chromatography. (Illustrated, 2 x 2 and 3¼ x 4)

2:45 *409.* SCHRANK, A. R., University of Texas, Austin, Texas. (P) Effect of Inorganic Ions and Their Electrical Conductivities on Geotropic Curvature of the *Avena* Coleoptiles.

3:00 *410.* MORELAND, D. E., North Carolina State College, Raleigh, N. C. (P) Results of Preliminary Studies on the Translocation of Radioactive Phosphorus in Loblolly Pine *(Pinus taeda).* (Illustrated, 3¼ x 4)

3:15 *411.* VERNON, L. P., and S. ARONOFF, Iowa State College, Ames, Iowa. (P) Translocation in Soybean Plants. (Illustrated, 3¼ x 4)

3:30 *412.* EYSTER, H. C., Charles F. Kettering Foundation, Yellow Springs, Ohio. (B) Essentiality of Manganese and Molybdenum for the Growth of Pure Cultures of *Nostoc muscorum.* (Illustrated, 2 x 2)

3:45 *413.* EYSTER, H. C., Charles F. Kettering Foundation, Yellow Springs, Ohio. (P) Effect of Indole-3-Acetic Acid on Growth of *Nostoc muscorum.* (Illustrated, 3¼ x 4)

4:00 *414.* PHILLIPS, J. N., JR., and J. MYERS, University of Texas, Austin, Texas. (B) On the Mass Culture of Algae. (Illustrated, 3¼ x 4)

4:15 *415.* YOCUM, CONRAD S., Hopkins Marine Station, Pacific Grove, Calif. (B) Photochemical Adaptation in Red Algae.

Session 1C. Joint Meeting of Physiological Section with the American Society of Plant Physiologists, ***Ford Hall, Room 155.*** P. J. KRAMER, presiding.

2:00 *416.* KRAMER, P. J., W. S. RILEY, and T. T. BANNISTER, Duke University, Durham, N. C. (B) Cypress Knees as Aerating Structures. (Illustrated, 3¼ x 4)

2:10 *417.* SIEGELMAN, H. W., U.S.D.A., Wenatchee, Wash. (B) Respiratory Metabolism of Rose Petals. (Illustrated, 3¼ x 4)

2:25 *418.* JENSEN, W. A., University of Chicago, Chicago, Ill. (B) The Effect of Boron on the Germination of Flax Seed and the Respiration of Flax Seedlings. (Illustrated, 2 x 2)

2:40 *419.* LOCKETT, C., and B. LUYET, St. Louis University, St. Louis, Mo. (B) Survival of Soaked Seeds with Various Water Contents After Freezing in Liquid Nitrogen at —195° C. (Illustrated, 3¼ x 4)

3:00 *420.* CURTIN, T. J., and R. D. POWELL, University of Florida, Gainesville, Fla. (P) Studies on Hardcoatedness in the Seeds of *Lupinus* species. (Illustrated, 3¼ x 4)

3:15 *421.* COMMONER, B., and PHYLLIS M. DIETZ, Washington University, St. Louis, Mo. (B) The Effect of Tobacco Mosaic Virus on the Nitrogen Metabolism of Isolated Leaf Tissue. (Illustrated, 3¼ x 4)

3:30 *422.* COMMONER, B., P. M. NEWMARK, and S. RODENBERG, Washington University, St. Louis, Mo. (B) Electrophoretic Analysis of the Time-course of Tobacco Mosaic Virus Biosynthesis. (Illustrated, 3¼ x 4)

3:45 *423.* SINGER, S. J., J. G. BALD, R. D. OWEN, and S. G. WILDMAN, California Institute of Technology, Pasadena, Calif., and University of California, Los Angeles, Calif. (P) The Detection and Isolation of Strains of Tobacco Mosaic Virus by Electrophoresis.

4:00 *424.* CHESSIN, M., Montana State University, Missoula, Mont. (P) Further Effects of Host Nutrition on Tobacco Mosaic Virus.

Session 2. Joint Meeting of Microbiological Section with the Mycological Society of America, ***Physics, Room 133.*** W. LAWRENCE WHITE, presiding.

2:00 *425.* BENJAMIN, RICHARD K., University of Illinois, Urbana, Ill. A Comparison of the Species of *Myxotrichum* with Hooked Appendages. (Illustrated, 2 x 2)

2:15 *426.* FENNELL, DOROTHY I., and KENNETH B. RAPER, Northern Regional Research Laboratory, USDA, Peoria, Ill. Two Noteworthy Fungi from Liberian Soil. (Illustrated, 3¼ x 4)

2:25 *427.* OLIVE, LINDSAY S., Columbia University, New York, N. Y. Morphology and Cytology of *Itersonilia perplexans.* (Illustrated, 3¼ x 4)

2:40 *428.* LICHTWARDT, ROBERT W., University of Illinois, Urbana, Ill. Three Species of *Eccrinales* from Millipeds. (Illustrated, 3¼ x 4)

3:10 *429.* PETERSON, JOHN E., JR., Michigan State College, East Lansing, Mich. Infrequently Reported Myxomycetes Developed in Moist Chamber Cultures. (Illustrated, 2 x 2)

3:25 *430.* KARLING, JOHN S., Purdue University, Lafayette, Ind. *Sommerstorffia spinosa.* (Illustrated, 3¼ x 4)

3:40 *431.* KARLING, JOHN S., Purdue University, Lafayette, Ind. Polycentric Isolates of *Phlyctorhiza variabilis.* (Illustrated, 3¼ x 4)

WEDNESDAY EVENING, SEPTEMBER 12

6:00 **Annual Banquet,** ***Coffman Memorial Union, Junior Ballroom.***

8:30—11:00 **Biologists' Smoker** and **Open House,** ***Biological Sciences Exhibit Hall, Coffman Memorial Union.***

★

HEATH invites you to see these texts in the BIOLOGY LIBRARY at the exhibit

STOVER: **An Introduction to the Anatomy of Seed Plants**

SNYDER: **The Principles of Heredity, Fourth Edition**

HENRICI AND ORDAL: **The Biology of Bacteria, Third Edition**

McBAIN: **Colloid Science**

FIESER AND FIESER: **Organic Chemistry, Second Edition**

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8. THE ECOLOGICAL SOCIETY OF AMERICA

The Ecological Society of America was organized on December 28, 1915, at Columbus, Ohio, to promote the scientific study of organisms in relation to their environment, both as individuals and as members of populations and communities, and to facilitate the exchange of ideas among those interested in ecology. Total membership, 948.

President, S. CHARLES KENDEIGH, University of Illinois, Champaign, Ill.

Vice-President, F. W. ALBERTSON, Ft. Hays Kansas State College, Hays, Kans.

Secretary, MURRAY F. BUELL, Rutgers University, New Brunswick, N. J.

Treasurer, F. H. TEST, University of Michigan, Ann Arbor, Mich.

Representative on the Governing Board, AIBS, WILLIAM A. DAYTON, Forest Service, USDA, Washington, D. C.

Conference Room No. 325 at the ***Coffman Memorial Union*** has been reserved for the entire convention period for the use of the Ecological Society of America for council, committee, and other small group meetings.

FRIDAY, SEPTEMBER 7—SUNDAY, SEPTEMBER 9

Field Program, University of Minnesota Biological Station, Itasca State Park

T. SCHANTZ-HANSEN, University of Minnesota Experimental Forest, Cloquet, Minnesota, presiding.

Facilities. The physical plant of the Biological Station is available to the group; this includes a large meeting hall, dining room, laboratories, and cabins. Boats can be rented at nearby docks of the State Parks Division. The dining hall will be open Friday evening through Sunday noon. Small group cabins (6 persons each) will be assigned registrants as they arrive; it may be possible to house families as a unit. Blankets and pillows will be furnished but sheets will not. Central showers with hot water are available. The cost for food and lodging Friday afternoon through Sunday noon will be approximately $11. Transportation on the field trips will be arranged by cars.

Access. The Biological Station is 225 miles northwest of Minneapolis on State Highway 92, eight miles from its junction with U. S. 71 at the entrance to Itasca State Park. It can be reached by car from the southeast via U. S. 10 from Minneapolis to Wadena, U. S. 71 from Wadena to the junction with State Highway 92; from the northeast, via U. S. 2 from Duluth to Bemidji, and U. S. 71 to the junction of State Highway 92. The best public transportation is by Greyhound bus from Minneapolis (time six hours, round trip fare $8.91). Buses stop at Douglas Lodge which is four miles from the station. Local committee members can meet passengers if called from the Lodge. Rail schedules are difficult to arrange, the nearest points being Wadena and Bemidji where transfer can be arranged to buses.

Reservations. Persons planning to attend the field meetings should notify Dr. William H. Marshall, Biological Station, Douglas Lodge, Minnesota, by mail between August 1 and August 20. Address until July 30, University Farm, St. Paul, Minnesota. Please indicate number of persons requiring accommodations and means of travel. If you will have space in a car for extra persons on the field trips, please indicate number. By September the weather may be cool with strong northwest winds; therefore, sweaters and wind-resistant clothing are desirable.

Features of the Area. Itasca Park itself is a fifty-square-mile natural area with many virgin stands of maple-basswood, spruce-fir, and red pine of great beauty. Other forest stands are present in wide variety, and interesting examples of bog succession are to be found. The park has been the scene of high deer and beaver populations and affords an opportunity to observe the effects of these over-populations on forest development. The station is situated on the east shore of Lake Itasca which is known as the source of the Mississippi River. The Lake, and other nearby lakes, have been intensively studied by staff members of the station. The region lies at the junction of the southern hardwoods, northern conifers, and the prairies on the west. The Saturday field trip is designed to exploit the contrasts of these three to the fullest extent.

FRIDAY AFTERNOON, SEPTEMBER 7

1:00 **Registration** for the Field Program, ***Itasca Park Biological Station.***

3:00 **Field Trip,** MURRAY F. BUELL, Rutgers University, New Brunswick, N. J., leading. The Spruce-Fir Forest, Itasca Park.

FRIDAY EVENING, SEPTEMBER 7

8:00 **Indoor Program,** T. SCHANTZ-HANSEN, University of Minnesota Experimental Forest, presiding.

Welcome and History of the Biological Station. T. SCHANTZ-HANSEN. Preview of the Field Trips. MURRAY F. BUELL, SAMUEL EDDY, and WILLIAM MARSHALL.

SATURDAY MORNING AND AFTERNOON, SEPTEMBER 8

Concurrent Field Trips A and B

8:00 a.m.–6:00 p.m. **Trip A. Terrestrial Ecology: The Maple-Basswood-Prairie Ecotone.** MURRAY F. BUELL, leading.

(a) The Hardwood Forest, Itasca Park.

(b) Distribution Pattern of the Hardwood Forest near the Western Edge of the Park, Tulaby Tower.

(c) Hardwood Stand on Degraded Chernozem at Waubun.

(d) Glacial Lake Agassiz Beach, West of Fertile.

(e) Glacial Lake Agassiz Dunes, South of Fertile.

8:00 a.m.–6:00 p.m. **Trip B. Aquatic Ecology. Local Trips To Be Arranged if Interest Warrants.** SAMUEL EDDY, leading.

SATURDAY EVENING, SEPTEMBER 8

8:00 **Moving Pictures. Natural History of the Red Lake Region.** WALTER J. BRECKENRIDGE, University of Minnesota, Minneapolis, Minn.

SUNDAY MORNING, SEPTEMBER 9

Concurrent Trips A and B

8:00–11:00 **Trip A. Aquatic Ecology: Limnology of Lake Itasca.** SAMUEL EDDY, leading.

8:00–11:00 **Trip B. Terrestrial Ecology: Itasca Park Mary's Lake Deer Enclosures.** WILLIAM MARSHALL, leading. **Twin Lakes Bog Succession;** MURRAY BUELL, leading.

After lunch, departure for Minneapolis campus, University of Minnesota.

Program at the University of Minnesota, Minneapolis, Minn.

MONDAY MORNING, SEPTEMBER 10

9:00 **Symposium: The Definition, Evolution, and Significance of Ecological Niches for Animals, *Murphy Hall Auditorium.*** S. CHARLES KENDEIGH, presiding.

9:00 *429.* EGGLETON, FRANK E., University of Michigan, Ann Arbor, Mich. Aquatic Invertebrates. (Illustrated)

9:30 *430.* HODSON, ALEXANDER C., University of Minnesota, St. Paul, Minn. Terrestrial Invertebrates. (Illustrated)

10:00 *431.* FITCH, HENRY S., University of Kansas, Lawrence, Kans. Cold-Blooded Vertebrates. (Illustrated)

10:30 *432.* LINSDALE, JEAN M., University of California, Berkeley, Calif. Warm-Blooded Vertebrates. (Illustrated)

11:00 *433.* KENDEIGH, S. CHARLES, University of Illinois, Champaign, Ill. Summary.

MONDAY AFTERNOON, SEPTEMBER 10

Concurrent Sessions A and B

2:00 **Session A. Symposium: Why Plants Grow Where They Do.** Joint Meeting with the Physiological Section of the Botanical Society of America and the American Society of Plant Physiologists, ***Minnesota Museum of Natural History Auditorium.*** W. M. HIESEY, presiding.

2:00 *434.* NUTTONSON, M. Y., American Institute of Crop Ecology, Washington, D. C. Adaptation and Global Distribution of Plants from the Viewpoint of Agro-Climatology. (Illustrated)

2:30 *435.* OLMSTED, CHARLES E., University of Chicago, Chicago, Ill. Photoperiodism and Plant Distribution. (Illustrated)

3:00 *436.* STOUT, PERRY R., University of California, Berkeley, Calif. Influence of the Soil-Adsorbed Cations on the Mineral Nutrition of Plants. (Illustrated)

3:30 *437.* BILLINGS, WILLIAM D., University of Nevada, Reno, Nev. The Environmental Complex and Plant Distribution. (Illustrated)

4:00 *438.* SHARP, AARON J., University of Tennessee, Knoxville, Tenn. Plant Distribution from the Viewpoint of Historical Plant Geography. (Illustrated)

2:00 **Session B. Symposium: The Application of Ecological Knowledge to Water Conservation, *Murphy Hall Auditorium.*** DAVID E. DAVIS, presiding. Organized by the Society's Committee on Applied Ecology.

2:00 *439.* DAVIS, DAVID E., The Johns Hopkins University, Baltimore, Md. The Problem.

2:10 *440.* WALLACE, DAVID H., Oyster Institute of America. Shellfisheries. Comments by FRANCIS BEAVEN, Maryland Department of Research and Education, Solomons, Md.

2:40 *441.* KIMBALL, JAMES W., River Basin Section, Fish and Wildlife Service, USDI, Washington, D. C. Game. Comments by JOSEPH C. HICKEY, University of Wisconsin, Madison, Wis.

3:10 *442.* WOODWARD, FRANK L., Minnesota Department of Health, Minneapolis, Minn. Public Health. Comments by DAVID E. DAVIS, The Johns Hopkins University, Baltimore, Md.

3:40 *443.* SVENSEN, HAROLD A., Forest Service, USDA, Washington, D. C. Forests. Comments by HENRY I. BALDWIN, New Hampshire Forestry Commission, Hillsboro, N. H.

4:10 *444.* JOHNSON, RAYMOND, Minnesota Department of Conservation, St. Paul, Minn. Fisheries. Comments by SAMUEL EDDY, University of Minnesota, Minneapolis, Minn.

4:40 *445.* SAVAGE, DAVID A. Southern Great Plains Field Station, Bureau of Plant Industry, USDA, Woodward, Okla. Grasslands. Comments by RAYMOND W. DARLAND, Duluth Branch, University of Minnesota, Duluth, Minn.

5:10 *446.* DAVIS, DAVID E., The Johns Hopkins University, Baltimore, Md. Summary.

MONDAY EVENING, SEPTEMBER 10

6:00 **Annual Dinner, *Coffman Memorial Union, Junior Ballroom.*** S. CHARLES KENDEIGH, presiding

Address: Our Eastern Forests—in Kodachrome.
E. LUCY BRAUN, past president.

8:00 **General Meeting for All Participating Societies,** American Institute of Biological Sciences. NORTHROP AUDITORIUM.

Federal Support of Fundamental Research in the Biological Sciences

Address by ALAN WATERMAN, Director, National Science Foundation

TUESDAY MORNING, SEPTEMBER 11

Concurrent Sessions A, B, and C

9:00 **Session A. Symposium: Ecology of Grassland Utilization in Central United States.** Joint Session With the Grassland Research Foundation. F. W. ALBERTSON, presiding. ***Minnesota Museum of Natural History Auditorium.***

9:00 *447.* COSTELLO, DAVID F., Rocky Mountain Forest Experiment Station, Forest Service, Fort Collins, Colo. Ecology of Short-grass Utilization in Eastern Colorado and Southeastern Wyoming. (Illustrated, 2 x 2)

9:20 *448.* TOMANEK, GERALD W., University of Nebraska, Lincoln, Nebr. Utilization of Grasslands in Eastern Nebraska. (Illustrated, 3¼ x 4)

9:40 *449.* ANDERSON, KLING L., Kansas State College, Manhattan, Kans. Utilization of Grasslands in the Flint Hills of Kansas.

10:10 *450.* ALBERTSON, FRED W., Fort Hays Kansas State College, Hays, Kans. Utilization of Vegetation in Mixed Prairie of West-Central Kansas. (Illustrated, 2 x 2 and 3¼ x 4)

10:30 *451.* MCILVAIN, E. H., Southern Great Plains Field Station, Bureau of Plant Industry, Woodward, Okla. Ecology of Utilization of Sand Sage Rangeland in the Southern Great Plains. (Illustrated, 2 x 2)

10:50 *452.* DYKSTERHUIS, EDSKO J., Soil Conservation Service, USDA, Lincoln, Nebr. Some Ecological Principles Currently Widely Used to Guide Inventory and Utilization of Grassland in Central United States.

9:00 **Session B. Symposium: Vegetation of the Upper Great Lakes Region.** Joint Session with the Systematic Section, Botanical Society of America. ROGERS MCVAUGH, presiding. ***Mechanical Engineering, Room 18.*** See p. 41.

9:00 **Session C. Contributed Papers on Wisconsin Vegetation.** J. E. POTZGER, presiding. ***Minnesota Museum of Natural History, Room 3.***

9:00 *453.* CURTIS, JOHN T., University of Wisconsin, Madison, Wis. A Wisconsin Prairie Continuum Based upon Presence Data. (Illustrated, 2 x 2)

9:15 *454.* ARCHBALD, DAVID, University of Wisconsin, Madison, Wis. Prairie Reestablishment. (Illustrated, 2 x 2)

9:30 *455.* WAGNER, BENJAMIN, University of Wisconsin, Madison, Wis. Characteristics of Prairie Soils and Vegetation of Southern Wisconsin.

9:45 *456.* BROWN, ROBERT T. and JOHN T. CURTIS, University of Wisconsin, Madison, Wis. A Northern Conifer-Hardwood Forest Continuum. (Illustrated, 2 x 2)

10:00 *457.* GILBERT, MARGARET L., University of Wisconsin, Madison, Wis. Herb Composition of the Hardwood Forests of Southern Wisconsin. (Illustrated, 2 x 2)

10:15 *458.* TRESNER, HOMER D., University of Wisconsin, Madison, Wis. Introduced by John T. Curtis. Microflora of the Upland Forest Continuum. (Illustrated, 2 x 2)

10:30 *459.* RANDALL, WILLIAM E., Jr., University of Wisconsin, Madison, Wis. Interrelations of Autecological Characteristics of Woodland Herbs. (Illustrated, 2 x 2)

10:45 *460.* WHITFORD, PHILIP B., Milwaukee Extension Division, University of Wisconsin, Milwaukee, Wis. Some Aspects of Clonal Reproduction in Forest Herbs.

11:00 *461.* COTTAM, GRANT, University of Wisconsin, Madison, Wis. Phytosociological Measurements on Non-Random Plant Distributions. (Illustrated, 3¼ x 4)

11:15 *462.* STEARNS, FOREST W., Purdue University, Lafayette, Ind. Past and Present Conditions in a Pine Stand in Northern Wisconsin. (Illustrated, 3¼ x 4)

TUESDAY AFTERNOON, SEPTEMBER 11

2:00 **Annual Business Meeting, *Botany, Auditorium, Room 06.***

2:30—6:00 Open Houses of Various Departments and Divisions on the Minneapolis and St. Paul Campuses. See General Program, p. 11.

WEDNESDAY MORNING, SEPTEMBER 12

Concurrent Sessions A and B

9:00 **Session A. Contributed Papers, Botanical, *Minnesota Museum of Natural History Auditorium.*** RAYMOND W. DARLAND, presiding.

9:00 *463.* POTTER, LOREN D., North Dakota Agricultural College, Fargo, N. Dak. Native Pines of North Dakota. (Illustrated, 2 x 2)

9:15 *464.* OOSTING, HENRY J., Duke University, Durham, N. C., and JOHN F. REED, University of Wyoming, Laramie, Wyo. Phytosociology of Virgin Spruce-Fir Forest in the Medicine Bow Mountains, Wyoming. (Illustrated, 2 x 2)

9:25 *465.* MARR, JOHN W., University of Colorado, Boulder, Colo. Project Design for Simultaneous Readings of Environmental Factors for One Year in Three Mountain Climates. (Illustrated, 2 x 2)

9:40 *466.* DUNCAN, DONALD P., University of Minnesota, St. Paul, Minn. The Influence of Temperature on the Germination of Tamarack *(Larix laricina).* (Illustrated, 3¼ x 4)

10:00 *467.* POTZGER, JOHN E., Butler University, Indianapolis, Ind. The Forest Primeval of Indiana as Recorded in the Original U. S. Land Survey. (Illustrated, 2 x 2)

10:10 *468.* RUDD, VELVA E., Smithsonian Institution, Washington, D. C. Vegetation of the Venezuela Llanos. (Illustrated, 2 x 2)

10:25 *469.* GATES, FRANK C., Kansas State College, Manhattan, Kans. Notes on the Decay of Certain Leaves Buried at Different Depths in Sphagnum Peat.

10:40 *470.* JACOBS, DON L., University of Georgia, Athens, Ga. *Ricciaceae* of Arkansas, Importance in the Flora of North America. (Illustrated, 2 x 2)

10:50 *471.* BARTSCH, A. F., U. S. P H. S., Washington, D. C., Water Pollution in the United States. (Illustrated, 2 x 2)

11:10 *472.* LAWRENCE, DONALD B., University of Minnesota, Minneapolis, Minn. Glacier Fluctuation for Six Centuries in Western North America. (Illustrated, 2 x 2)

9:00 **Session B. Contributed Papers, Zoological, *Minnesota Museum of Natural History, Room 3.*** ALEXANDER C. HODSON, presiding.

9:00 *473.* GOODNIGHT, CLARENCE J., Purdue University, Lafayette, Ind. The Phalangid Fauna in Relation to the Biotic Regions of Chiapas, Mexico. (Illustrated, 3¼ x 4).

9:15 *474.* DAVIS, DAVID E., The Johns Hopkins University School of Hygiene and Public Health, Baltimore, Md. The Home Range of *Homo sapiens.*

9:30 *475.* REID, ELBERT H., Forest Service, USDA, Washington, D. C. The Influence of Dallas Pocket Gopher on Mountain Meadow Vegetation. (Illustrated, 2 x 2)

9:45 *476.* MOORE, WALTER G., Loyola University, New Orleans, La. Louisiana Fresh-Water Sponges, with Observations on the Ecology of the Sponges in the New Orleans Area. (Illustrated, 3¼ x 4)

10:00 *477.* SMITH, FREDERICK E., University of Michigan, Ann Arbor, Mich. Qualified Estimates of Feeding Specializations in a System of Many Predator and Prey Species.

10:15 *478.* DEXTER, RALPH W., Kent State University, Kent, Ohio. Ecological Studies on North American Fairy Shrimps. (by title)

10:20 *479.* HAIRSTON, NELSON G., University of Michigan, Ann Arbor, Mich. The Small Arthropods of an Old Field Community in Southern Michigan. (Illustrated, 3¼ x 4)

10:35 *480.* VOGEL, HOWARD H., JR., Argonne National Laboratory, Chicago 80, Ill. Planned Controls of Experimental Conditions in the Neutron Toxicity Program at Argonne National Laboratory. (Illustrated)

11:00 *481.* ODUM, EUGENE P., University of Georgia, Athens, Ga. Seasonal Variation in Body Lipids of the White-throated Sparrow in Relation to Migration. (Illustrated, 3¼ x 4)

11:10 *482.* PENNAK, ROBERT W., University of Colorado, Boulder, Colo. Hydrosere versus Limnosere. (Illustrated 3¼ x 4)

WEDNESDAY AFTERNOON, SEPTEMBER 12

Concurrent Sessions A and B

2:00 **Session A. Contributed Papers, General,** JOHN W. MARR, presiding. ***Minnesota Museum of Natural History, Room 3.***

2:00 *483.* COUPLAND, ROBERT T., and T. C. BRAYSHAW, University of Saskatchewan, Saskatoon, Saskatchewan. Festuca Grassland in Western Canada. (Illustrated, 2 x 2)

2:15 *484.* SHELFORD, V. E., University of Illinois, Champaign, Ill. Biotic Communities of the Mississippi River Flood Plain in Northwestern Tennessee. (Illustrated, 3¼ x 4)

2:30 *485.* KRAJINA, VLADIMIR, University of British Columbia, Vancouver, British Columbia. Succession of the Phytocenoses in Douglas Fir Forest Area of Vancouver Island. (Illustrated, 3¼ x 4)

2:45 *486.* KRAJINA, VLADIMIR, University of British Columbia, Vancouver, British Columbia. Classification of Douglas Fir Forest Area on Vancouver Island. (Illustrated, 3¼ x 4)

3:00 *487.* HALE, MASON E., University of Wisconsin, Madison, Wis. A Revised Life Form Classification for Arctic Lichens. (Illustrated, 2 x 2)

3:10 *488.* ODUM, EUGENE P., and DAVID W. JOHNSTON, University of Georgia, Athens, Ga. Breeding Bird Populations in Relation to Plant Succession on the Piedmont of Georgia. (Illustrated, 2 x 2)

3:20 *489.* DOWDY, WILLIAM W., Lincoln University, Jefferson City, Mo. Studies on Arthropod Stratification. (Illustrated)

3:30 *490.* MCDILL, R. L. and JOHN M. AIKMAN, Iowa Agricultural Experiment Station and Iowa Highway Commission, Ames, Iowa. Experimental Seeding Tests on Highway Backslopes. (Illustrated)

3:45 *491.* MOYER, J. F. and JOHN M. AIKMAN, Iowa State College, Ames, Iowa. Ecological Comparison of Two Prairie Preserves. (Illustrated)

2:00 **Session B. Joint Meeting with The Nature Conservancy, *Murphy Hall Auditorium.*** Business Meeting of The Nature Conservancy, STANLEY A. CAIN, presiding.

WEDNESDAY EVENING, SEPTEMBER 12

8:30—11:00 **Biologists' Smoker and Open House at the Biological Sciences Exhibit Hall, *Coffman Memorial Union.***

THURSDAY, SEPTEMBER 13

Local Field Trip, The Ecological Society of America, WILLIAM S. COOPER, leading.

An opportunity will be offered to visit the Maple-Basswood "big woods" on deep glacial till of Mankato Age (late Wisconsin) on the east side of Lake Minnetonka, the Anoka Sandplain with its outwash and ice block pit lakes of Mankato Age, and the more recent sand dunes. Tall grass prairie, oak woods, pine forest, and Cedar Creek Bog Forest Natural History Reservation will be visited.

Reservations for this trip should be made before noon of September 12 in the Minnesota Museum of Natural History lobby.

9. GENETICS SOCIETY OF AMERICA

The Genetics Society of America was organized at New Orleans, Louisiana, in 1931, an outgrowth of the Genetics Section of the American Society of Zoologists and of the Botanical Society of America. Its objectives are to provide facilities for association among students of heredity and for encouragement of close relationship between workers in genetics and those in related sciences. Total membership, 894.

President, M. R. IRWIN, University of Wisconsin, Madison, Wis.
Secretary, W. R. SINGLETON, Brookhaven National Laboratory, Upton, N. Y.
Treasurer, ERNST CASPARI, Wesleyan University, Middletown, Conn.
Representative on the Governing Board, AIBS, BENTLEY GLASS, The Johns Hopkins University, Baltimore, Md.

Conference Room No. 315, *Coffman Memorial Union,* has been reserved for the Genetics Society of America throughout the convention period as a place for council and committee meetings.

Program of the Twentieth Annual Meeting

MONDAY MORNING, SEPTEMBER 10

Session A. Contributed Papers, ***Botany Auditorium, Room 06.*** JAMES V. NEEL, chairman.

9:00 *492.* BERNIER, PAUL E., Oregon State College, Corvallis, Ore. Micromelia VII, an Overdominant Recessive Lethal in the Domestic Fowl.

9:10 *493.* ABPLANALP, HANS, and I. L. KOSIN, State College of Washington, Pullman, Wash. Heritability of Growth in Turkeys.

9:20 *494.* SMITH, HAROLD H., Cornell University, Ithaca, N. Y. Relation Between Sterility and Morphological Characters in an Interspecific Nicotianacross.

9:30 *495.* SMITH, W. K., University of Wisconsin, Madison, Wis. Chlorophyll-deficient Interspecific Hybrids in *Melilotus.*

9:40 *496.* BRINGHURST, ROYCE S., University of California, Los Angeles 24, Calif. Genetic Analysis of Chlorophyll Deficiency in *Melilotus alba* x *M. dentata* Hybrids With Some Observations on Meiotic Irregularities.

9:50 *497.* LAUGHNAN, JOHN R., University of Illinois, Urbana, Ill. Reaction Sequence in Anthocyanin Synthesis in Maize.

10:00 *498.* MICKEY, GEORGE H., Northwestern University, Evanston, Ill. The Origin in a Mosaic of a New Third Chromosomal Dominant Eye Mutation in *Drosophila melanogaster.*

10:10 *499.* GARDNER, ELDON J., Utah State Agricultural College, Logan, Utah. Genes Producing a Maternal Effect in *Drosophila melanogaster.*

10:20 *500.* ROTHENBUHLER, WALTER C., JOHN W. GOWEN, and O. W. PARK, Iowa State College, Ames, Iowa. Androgenesis in Gynandromorphic Honey Bees (*Apis mellifera*).

10:30 *501.* FRASER, F. CLARK, and T. D. FAINSTAT, McGill University, Montreal, Quebec. Strain Differences in the Incidence of Cleft Palate in the Offspring of Pregnant Mice Treated with Cortisone.

10:40 *502.* STRONG, LEONELL C., Yale University School of Medicine, New Haven, Conn. A Cumulative Change in Susceptibility to Induce Fibrosarcoma in Mice, Associated with Litter Seriation.

10:50 *503.* STORMONT, CLYDE, University of California, Davis, Calif. An Example of a Recessive Blood Group in Sheep.

MONDAY AFTERNOON, SEPTEMBER 10

Session A. Contributed Papers, **Botany *Auditorium, Room 06.*** JOHN W. GOWEN, chairman.

2:00 *504.* CLARK, A. M., and C. J. MITCHELL, University of Delaware, Newark, Del. Radiosensitivity of Haploids and Diploids of *Habrobracon.*

2:10 *505.* LEFEVRE, GEORGE, JR., and F. J. RATTY, JR., University of Utah, Salt Lake City, Utah. X-ray Induced Effects in the White-notch Region of Wild-type and White-mottled-4 Chromosomes of *Drosophila melanogaster.*

2:20 *506.* MULLER, H. J., and J. I. VALENCIA, Indiana University, Bloomington, Ind. The Localization of the Mutagenic Action of Neutron-induced Ionizations in *Drosophila.*

2:30 *507.* VALENCIA, J. I., and J. T. MCQUATE, Indiana University, Bloomington, Ind. A Cytogenetic Analysis of 70 Ultraviolet-induced X-chromosome Lethals in *Drosophila.*

2:40 *508.* MEYER, HELEN U., Indiana University, Bloomington, Ind. Photoreactivation of Ultraviolet Mutagenesis in the Polar Cap of *Drosophila.*

2:50 *509.* LUCE, M., University of Illinois, Urbana, Ill. Reduction in Facet Number in Full-eyed (Reverted Bar) *Drosophila* by X-rays.

3:00 *510.* HERSKOWITZ, IRWIN H., Louisiana State University Medical School, New Orleans 12, La. Mutation Rate in *Drosophila melanogaster* Males Treated with Formaldehyde and 2,4-dinitrophenol.

3:10 *511.* KOESTER, MARY L., Brookhaven National Laboratory, Upton, N. Y. The Effect of Continuous Gamma Radiation Upon Starch Formation in *Zea mays* pollen.

3:20 *512.* SINGLETON, W. R., Brookhaven National Laboratory, Upton, N. Y. Effect of Continuous Gamma Radiation on Mutation Rate in Maize.

3:30 *513.* FABERGE, A. C., University of Missouri, Columbia, Mo. Ultraviolet Induced Chromosome Aberrations in Maize.

MONDAY EVENING, SEPTEMBER 10

8:30 **General Meeting for All Participating Societies,** American Institute of Biological Sciences, ***Northrop Auditorium.***

Federal Support of Fundamental Research in the Biological Sciences. Address by ALAN WATERMAN, Director, National Science Foundation.

TUESDAY MORNING, SEPTEMBER 11

Session A. Invitation Program, ***Botany Auditorium Room 06.*** DONALD F. JONES, chairman.

9:00 *514.* STALKER, HARRISON D., Washington University, St. Louis, Mo. Diploid Parthenogenesis in the *Cardini* Species of *Drosophila.*

9:25 *515.* SWANSON, C. P., and HENRY T. YOST, JR., The Johns Hopkins University, Baltimore, Md. The Action of Infrared Radiation on the Chromosomes of *Tradescantia.*

9:50 *516.* WHITE, M. J. D., University of Texas, Austin, Texas. Supernumerary Chromosomes in the Trimerotropine Grasshoppers.

10:15 *517.* COOPER, D. C., Genetics Department, University of Wisconsin, Madison, Wis. The Transfer of Desoxyribose Nucleic Acid from the Tapetum to the Microsporocytes at the Onset of Meiosis.

10:40 *518.* BRAUN, W., and ROBERT J. GOODLOW, Camp Detrick, Frederick, Md. The Role of Amino Acids in Bacterial Population Changes.

11:05 *519.* GOWEN, JOHN W., and JANICE STADLER; PLOUGH, H. H., and HELEN MILLER, Iowa State College, Ames, Iowa; and Amherst College, Amherst, Mass. On the Chemical Basis for Typhoid Resistance in Mice.

TUESDAY NOON, SEPTEMBER 11

12:30 **Genetics Society Luncheon and Business Meeting, *Junior Ballroom, Coffman Memorial Union.***

TUESDAY AFTERNOON, SEPTEMBER 11

Session A. Contributed Papers, ***Zoology, Room 313.*** H. J. MULLER, chairman.

2:00 *520.* GAULDEN, MARY ESTER, Oak Ridge National Laboratory, Oak Ridge, Tenn. A Prolonged Visible Change Produced by Heat in the Chromatin of Living Grasshopper Neuroblasts.

2:10 *521.* CALDECOTT, RICHARD S., and LUTHER SMITH, State College of Washington, Pullman, Wash. The Influence of Heat Treatments on the Injury and Cytogenetic Effects of X-rays on Barley.

2:20 *522.* KIMBALL, R. F., and NENITA GAITHER, Oak Ridge National Laboratory, Oak Ridge, Tenn. Modification of the Action of X-rays Upon *Paramecium aurelia.*

2:30 *523.* RUSSELL, W. L., J. C. KILE, JR., and LIANE B. RUSSEL, Oak Ridge National Laboratory, Oak Ridge, Tenn. Failure of Hypoxia to Protect Against the Radiation Induction of Dominant Lethals in Mice.

2:40 *524.* RILEY, HERBERT P., NORMAN H. GILES, JR., and ALVIN V. BEATTY, Oak Ridge National Laboratory, Oak Ridge, Tenn. The Oxygen Effect on X-ray Induced Chromatid Aberrations in *Tradescantia* Microspores.

2:50 *525.* GILES, NORMAN H., JR., H. P. RILEY, and A. V. BEATTY, Oak Ridge National Laboratory, Oak Ridge, Tenn. The Relation Between the Effects of Temperatures and of Oxygen on the Frequency of X-ray Induced Chromosome Aberrations in *Tradescantia* Microspores.

3:00 *526.* KIRBY-SMITH, J. S., Oak Ridge National Laboratory, Oak Ridge, Tenn. Effects of Infrared Irradiation on the Frequency of X- and Gamma-Ray Induced Chromosomal Aberrations in *Tradescantia* Pollen Tubes.

3:30 **Session B.** Demonstration Papers, ***Zoology Laboratory.***

a. BREWBAKER, JAMES L., Cornell University, Ithaca, N. Y. Oppositional Allelism in Diploid and Tetraploid Alsike Clover.

b. BROWN, WILLIAM L., and PAUL C. MANGELSDORF, Pioneer Hi-Bred Corn Company, Johnston, Iowa. The Effects on Yield and Morphology of the Addition of Teosinte Germ Plasm to Maize.

c. HEIDENTHAL, GERTRUDE, and LEONARD CLARK, Russell Sage College, Troy, N. Y., and Union College, Schenectady, N. Y. Survival Rates of *Habrobracon* Eggs Treated in First Meiotic Metaphase With Low and High Voltage X-radiation.

d. SHACKELFORD, RICHARD M., University of Wisconsin, Madison, Wis. Color Phases of the Ranch-bred Mink.

e. TAYLOR, J. HERBERT, University of Tennessee, Knoxville, Tenn. Chromosome Structure and Behavior in Relation to Gene Action.

WEDNESDAY MORNING, SEPTEMBER 12

7:30 **Corn-fab for Corn Geneticists, *Coffman Memorial Union, Cafeteria and Room 320.***

Session A. *Zoology, Room 313,* WERNER BRAUN, chairman.

9:00 *527.* WALSH, M. P., Boston College, Chestnut Hill, Mass. Chromosome Variations in *Lumbricus terrestri.*

9:10 *528.* LEVITAN, MAX, Virginia Polytechnic Institute, Blacksburg, Va. Response of the Chromosomal Variability in *Drosophila robusta* to Seasonal Factors in a Southwest Virginia Woods.

9:20 *529.* NEEL, J. V., I. C. WELLS, and H. A. ITANO, University of Michigan, Ann Arbor, Mich., and California Institute of Technology, Pasadena, Calif. Familial Differences in the Proportion of Abnormal Hemoglobin Associated with Heterozygosity for the Sickle Cell Gene.

9:30 *530.* MERRELL, DAVID J., University of Minnesota, Minneapolis, Minn. Selective Mating in Laboratory Populations of *Drosophila.*

9:40 *531.* MARKERT, C. L., University of Michigan, Ann Arbor, Mich. Comparative Gene Stability in *Glomerella* and *Neurospora.*

9:50 *532.* LIEB, MARGARET, California Institute of Technology, Pasadena, Calif. Studies of a Bacteriophage Carried by *Escherichia coli,* Strain K12.

10:00 *533.* NEWCOMBE, H. B., Atomic Energy Project, National Research Council of Canada, Chalk River, Ontario. Sectoring of Colonies from Irradiated Cells of *Escherichia coli.*

10:10 *534.* RUBIN, B. A., Brookhaven National Laboratory, Upton, N. Y. The Relation of Nucleic Acid Metabolism to the Genetic Effect of Radiation in Bacteria.

10:20 *535.* PAPAZIAN, H. P., University of Chicago, Chicago 37, Ill. Multiple-gene Control of Compatibility in a Hymenomycete.

10:30 *536.* RAUT, CAROLINE, Detroit Institute of Cancer Research, Detroit 1, Mich. Cytochrome Deficient Yeast Strains.

10:40 *537.* LINDEGREN, CARL C., Southern Illinois University, Carbondale, Ill. Multiplicity Function of Genes Controlling Carbohydrate Fermentation in Saccharomyces.

10:50 *538.* MUNDKUR, BALAJI D., Southern Illinois University, Carbondale, Ill. The Genetics of Long-term Adaptation to Galactose by Yeast.

Session B. *Botany Auditorium, Room 06.* ROBERT K. NABOURS, chairman.

9:00 *539.* JOHNSON, B. LENNART, University of California, Los Angeles, Calif. Effect of Other Genes and of Potassium Nutrition on the Expression of the Lethal Factor in Stocks.

9:10 *540.* JENKINS, J. A. and G. MACKINNEY, University of California, Berkeley, Calif. Inheritance of Carotenoid Differences in Yellow-tangerine Hybrids of the Tomato.

9:20 *541.* JONES, DONALD F., The Connecticut Agricultural Experiment Station, New Haven 4, Conn. The Induction of Cytoplasmic Pollen Sterility and the Restoration of Fertility in Maize.

9:30 *542.* SCHWARTZ, DREW, Oak Ridge National Laboratory, Oak Ridge, Tenn. A Case of Male Sterility in Maize Involving Gene-cytoplasm Interaction.

9:40 *543.* MITTLER, SIDNEY, Illinois Institute of Technology, Chicago 16, Ill. Variation in Tumor Formation in *Drosophila melanogaster* Reared on Yeasts That Do Not Require Vitamins or Amino Acids.

9:50 *544.* GREEN, M. M., University of California, Davis, Calif. The Detection of Mutant Isoalleles at the Vermilion Locus in *Drosophila melanogaster.*

10:00 *545.* FARNSWORTH, MARJORIE W., University of Missouri, Columbia, Mo. Effects of the Homozygous Minute-IV Deficiency on the Development of *Drosophila melanogaster.*

10:10 *546.* MILLER, W. J., and C. R. BRYAN, University of Wisconsin, Madison, Wis. Serological Differentiation of the Homozygote and Heterozygote Following a Species Cross in Pigeons.

10:20 *547.* BRYAN, C. R., and W. J. MILLER, University of Wisconsin, Madison, Wis. Interaction Between Alleles to Produce a Hybrid Substance.

10:30 *548.* CHASE, H. B., and P. F. FENTON, Brown University, Providence, R. I. The Expression of Obesity in Yellow Mice.

10:40 *549.* VICARI, EMELIA M., R. B. Jackson Laboratory, Bar Harbor, Maine. Relation of Epinephrine to the Genic Expression of Fatal Convulsive Seizures in Mice.

10:50 *550.* FOSTER, MORRIS, U. S. Public Health Service and University of Chicago, Chicago 37, Ill. Pigment-forming Abilities in Guinea-pig Skin.

11:00 *551.* VETUKHIV, M., Ukrainian Academy of Arts and Sciences, Inc., New York, N. Y. The Factor of Natural Resistance to TB in Animals.

WEDNESDAY AFTERNOON, SEPTEMBER 12

2:00 ***Joint Symposium*** With the American Society of Naturalists: **Patterns of Cellular Organization,** ***Natural History Museum Auditorium.***

BERWIN P. KAUFMANN, presiding.

a. ANDERSON, THOMAS F., University of Pennsylvania, Philadelphia, Pa. Stereoscopic Studies of Cells and Viruses in the Electron Microscope.

b. PORTER, KEITH R., Rockefeller Institute for Medical Research, New York, N. Y. The Submicroscopic Structure of Tissue Cells.

c. MAZIA, DANIEL, University of California, Berkeley, Calif. Molecular Organization in Cell Nucleus.

d. BONNER, JOHN T., Princeton University, Princeton, N. J. The Pattern of Differentiation in Amoeboid Slime Molds.

Papers To Be Read by Title.

552. BROWN, SPENCER W., Genetics Division, University of California, Berkeley, Calif. Activity of the Nucleolus-organizer of *Luzula campestris* in Relation to Internal Nucleola Structure.

553. BUNKER, HELEN P., and B. R. SPEICHER, University of Maine, Orono, Maine. Inheritance of Physiological Activity in *Habrobracon.*

554. BURDETTE, WALTER J., Louisiana State University School of Medicine, New Orleans, La. Administration of Diethylstilbestrol to the Tu-36a Strain of *Drosophila melanogaster.*

555. CENGER, A. D. and L. M. FAIRCHILD, Oak Ridge National Laboratory, Oak Ridge, Tenn.

556. DI PAOLO, JOSEPH A., Northwestern University, Evanston, Ill. An Attempt to Induce Mutations in *Drosophila melanogaster* with Nucleic Acid Compounds.

557. EDMONDSON, MARGARET, Indiana University, Bloomington, Ind. Induction of Sterility Mutations in Ultraviolet-treated Polar Cap Cells of *Drosophila.*

558. FORD, LEOLA E., Iowa State College, Ames, Iowa. Heterozygous Male-fertility in *Coleus.*

559. HUESTIS, R. R., University of Oregon, Eugene, Ore. Eye Spotting in the Deer Mouse.

560. HOLLANDER, W. F., Yale University Medical School, New Haven, Conn. Recessive Genes Epistatic to Dominants.

561. KIMBALL, ELIOT, Clinton Experimental Farm, Clinton, Conn. Recessive Black Plumage in the Fowl.

562. LEDERBERG, ESTER M., University of Wisconsin, Madison 6, Wis. Lysogenicity in *Escherichia coli,* K-12.

563. LEIN, P. S., and J. LEIN, Syracuse University, Syracuse, N. Y. Suppression of Non-allelic Acetate Requiring Mutates in *Neurospora.*

564. MACFARLANE, EILEEN W. E., ALLAN KATZBERG, and J. E. ALBERS, Institutum Divi Thomae, Cincinnati 6, Ohio. Degrees of Mitotic Poisoning in Corneal Cells.

565. MILLER, W. J., University of Wisconsin, Madison, Wis. The Time of Appearance of Species Specific Antigens of Columbia Guinea in the Embryos of Backcross Hybrids.

566. NABOURS, R. K., and F. M. STEBBINS, Kansas State College, Manhattan, Kans. X-ray Induced Translocations Among the Chromosomes of *Apotettix eurycephalus.*

567. NORMAN, AMOS, University of California, A. E. P., Los Angeles, Calif. Nuclear Interactions in UV-irradiated *Neurospora* Conidia.

568. PIPKIN, SARAH B., School of Medicine, American University of Beirut, Lebanon.

569. SAWIN, PAUL B., and R. H. CURRAN, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine. Racial Variation in the Patterns of Reproduction of the Rabbit.

570. STURTEVANT, FRANK M., JR., Northwestern University, Evanston, Ill. Studies on the Mutagenicity of Phenol in *Drosophila melanogaster.*

571. WEIR, J. A., University of Kansas, Lawrence, Kans. Ruby-spotted, a New Recessive Mutation in the House Mouse.

572. WITKIN, EVELYN M., Carnegie Institution,, Cold Spring Harbor, N. Y. Nuclear Segregation and Delayed Expression of Induced Mutations in *Escherichia coli.*

573. HUNGATE, FRANK P., Reed College, Portland, Ore. Sulfur-35 as a Mutagenic Agent.

WEDNESDAY EVENING, SEPTEMBER 12

8:30—11:00 **Biologists' Smoker and Open House at the Biological Sciences Exhibit Hall,** ***Coffman Memorial Union.***

10. MYCOLOGICAL SOCIETY OF AMERICA

The Mycological Society of America was organized in 1932 at Atlantic City, New Jersey, to foster the study of the fungi. Total membership, 507.

President, KENNETH RAPER, Regional Research Laboratory, Peoria, Ill.
Secretary, LELAND SHANOR, University of Illinois, Urbana, Ill.
Representative on the Governing Board, AIBS, F. D. KERN, Pennsylvania State College, State College, Pa.

MONDAY MORNING, SEPTEMBER 10

9:00 **Business Meeting, *Physics Room 133.***

Session A. *Physics Room 133,* KENNETH B. RAPER, presiding.

9:30 *574.* WHEELER, WILLIS H., and ALICE J. WATSON, Foreign Plant Quarantines, Entomology and Plant Quarantine, USDA, Washington, D. C., and Division of Mycology and Disease Survey, Beltsville, Md. Mycological Problems in Foreign Plant Quarantine. (Illustrated, 2 x 2)

9:45 *575.* CONNERS, I. C., Division of Plant Pathology and Botany, Science Service, Ottawa, Ontario. Species of *Kabatia* on *Lonicera* in Canada. (Illustrated, 3¼ x 4)

9:55 *576.* BAXTER, JOHN W., Purdue University, Lafayette, Ind. South American Species of *Puccinia* on *Salivia.* (Illustrated, 2 x 2)

10:05 *577.* BUBIENIEC, E. J., and M. H. GUSTAFSON, University of Wisconsin, Madison, Wis. The development of *Stamnaria americana* on *Equisetum hymenale* in Southern Wisconsin. (Illustrated, 3¼ x 4)

10:20 *578.* CAMPBELL, WILLIAM A., University of Georgia, Athens, Ga. The Relative Abundance of *Phytophthora cinnamomi* in Soil Under Different Plant Cover. (Illustrated, 2 x 2)

Session B. Joint Meeting with Microbiological Section of the Botanical Society of America, ***Physics, Room 166.***

9:30 See program of Botanical Society of America, p. 30.

MONDAY AFTERNOON, SEPTEMBER 10

Section I: Joint Session with the Microbiological Section of the Botanical Society of America. ***Physics, Room 133.***

2:00 **Address of the President,** Mycological Society of America. KENNETH B. RAPER, Northern Regional Research Laboratory, USDA, Peoria, Ill.

3:00 **Business Meeting,** Microbiological Section, Botanical Society of America.

4:00 Contributed Papers. See program of Botanical Society of America, p. 31.

Section II: Joint Session with the Microbiological Section of the Botanical Society of America. ***Physics, Room 166.***

4:00 Contributed Papers. See Program of Botanical Society of America, p. 32.

MONDAY EVENING, SEPTEMBER 10

8:30 **General Meeting for All Participating Societies,** American Institute of Biological Sciences, ***Northrop Auditorium.***

Federal Support of Fundamental Research in the Biological Sciences
Address by ALAN WATERMAN, Director, National Science Foundation.

TUESDAY MORNING, SEPTEMBER 11

Section I: Joint Session with Microbiological Section of the Botanical Society of America, ***Physics, Room 166.***

9:00 See Program of Botanical Society of America, p. 41.

Section II: Joint Session with Microbiological Section of the Botanical Society of America, ***Physics, Room 133.***

9:00 See Program of Botanical Society of America, p. 42.

TUESDAY AFTERNOON, SEPTEMBER 11

2:30 **Second Annual Lecture of the Mycological Society of America.** Joint Session of the Mycological Society of America and the Society for Industrial Microbiology. ***Physics, Room 133.***
KENNETH B. RAPER, presiding.

Address: Molds, Mutants, and Monographers. CHARLES THOM, Port Jefferson, N. Y.

WEDNESDAY MORNING, SEPTEMBER 12

9:00 Joint Session with the Microbiological Section of the Botanical Society of America, ***Physics, Room 133.*** See Program of Botanical Society of America, p. 45.

WEDNESDAY AFTERNOON, SEPTEMBER 12

2:00 Joint Session with Microbiological Section of the Botanical Society of America. ***Physics, Room 133.*** See Program of Botanical Society of America, p. 46.

WEDNESDAY EVENING, SEPTEMBER 12

8:30-11:00 **Biologists' Smoker** and **Open House at the Biological Sciences Exhibit Hall, *Coffman Memorial Union.***

11. SOCIETY FOR INDUSTRIAL MICROBIOLOGY

The Society of Industrial Microbiologists was organized on December 29, 1949, in New York City. At Columbus, Ohio, September 13, 1950, the name was changed to the Society for Industrial Microbiology. Its object is to bring together those who are interested in the various phases of microbiology as applied to industrial materials and processes. It encompasses certain borderline phases between biology, chemistry, and engineering, relative to deterioration of materials by microbiological attack and its prevention, microbiologic manufacturing, microbiologic assay, marine biology, sanitary engineering, and the like.

President, CHARLES THOM, Port Jefferson, N. Y.
Secretary, CHARLES L. PORTER, Purdue University, Lafayette, Ind.

MONDAY EVENING, SEPTEMBER 10

8:30 **General Meeting for All Participating Societies,** American Institute of Biological Sciences, ***Northrop Auditorium.***

Federal Support of Fundamental Research in the Biological Sciences

Address by ALAN WATERMAN, Director, National Science Foundation.

TUESDAY MORNING, SEPTEMBER 11

9:00 **Business Meeting,** CHARLES THOM, presiding. ***Physics Building, Room 145.***

579. PAN, S. C., L. W. NICHOLSON and PAUL KOLACHOV, Joseph E. Seagram and Sons, Inc., Louisville, Ky. Transglucosidase Activities of Amylase Preparations.

580. MANOWITZ, MILTON, and R. E. VICKLUND, Eng. Res. and Dev. Labs., Fort Belvoir, Va. Fungicidal Properties of Chelating Agents.

581. DION, W. M., W. B. MCCONNELL, L. R. WETTER, and G. A. LEDINGHAM, Prairie Regional Laboratory, Saskatoon, Saskatchewan. Production and Properties of Some Proteolytic Enzymes.

582. HURST, FANNIE M., and C. L. PORTER, Purdue University, Lafayette, Ind. Nutrition as a Cause of Variation in the Vegetative and Sexual Phases of *Aspergillus amstelodami.*

583. PORTER, C. L., and ROBERT L. JOHNSON, Purdue University, Lafayette, Ind. Some Findings Concerning the Development of Microsclerotia by *Varticillium albo-atrum.*

584. DULANEY, EUGENE L., and P. L. WILLIAMS, Merck and Company, Inc., Rahway, N. J. Observations on *Streptomyces griseus.* V. Synthetic Media for Production of Vitamin B_{12}-Active Substances.

TUESDAY AFTERNOON, SEPTEMBER 11

2:30 **Second Annual Lecture of the Mycological Society of America.** Joint Session of the Society for Industrial Microbiology and the Mycological Society of America. ***Physics, Room 133.*** KENNETH B. RAPER, presiding.

Address: Molds, Mutants, and Monographers, CHARLES THOM, Port Jefferson, N. Y.

WEDNESDAY MORNING, SEPTEMBER 12

9:30 Contributed Papers, CHARLES THOM, presiding. ***Physics Building, Room 145.***

585. EZEKIEL, WALTER N., Bureau of Ordnance, Department of the Navy, Washington, D. C. Selecting Funginert Materials for Military Electrical Equipment.

586. HARVEY, JAMES V., Environmental Health Center, Cincinnati, Ohio. The Efficiency of Fungicides in Preserving Materials.

587. APPLING, J. W., Buckman Laboratories, Inc., Memphis, Tenn. Method for Evaluating the Mold Resistance of Paper and Paper Board.

588. GOTTLIEB, DAVID, University of Illinois, Urbana, Ill. The Actinomycetes as Potential Deteriorating Agents.

589. MARTIN, G. W., State University of Iowa, Iowa City, Iowa. Techniques in the Isolation and Study of Fungi.

Business Meeting.

IV. THE BIOLOGICAL SCIENCES EXHIBIT

An important function of a national meeting of biological societies is the opportunity it provides teachers and research workers to get first-hand information of new books, instruments, and materials which are essential in the development of their research techniques and the success of their teaching programs.

The American Institute of Biological Sciences has carefully screened all exhibitors and has invited to the Biological Sciences Exhibit only those who had something of value to contribute to biologists. As a result, the Exhibit Hall is not only an interesting diversion but also an integral part of the meetings. Much time and thought has been spent by the exhibitors and the AIBS staff to make the 1951 Biological Sciences Exhibit Hall worth a serious and leisurely visit. It is centrally located in the main ballroom of the Coffman Memorial Union, and may be reached by stairs leading down from the Main Registration Desk. At its entrance is the Visible Index and a comfortable lounge. As a special feature, the Exhibit Hall will be open during the Biologists' Smoker, which will be held in adjoining rooms.

The hours of the Biological Sciences Exhibit are: Sunday, September 9, 3:00-9:00 p.m.; Monday, September 10, 8:00 a.m.-6:00 p.m.; Tuesday, September 11, 8:00 a.m.-6:00 p.m.; Wednesday, September 12, noon-11:00 p.m.

EXHIBITORS

The AIBS Biology Library (Booth 24). This includes a collection of current biological titles submitted by the following publishers: Academic Press, Chronica Botanica Company, Thomas Y. Crowell Company, Elsevier Press, Inc., W. H. Freeman and Company, Harper & Brothers, D. C. Heath and Company, Henry Holt and Company, Interscience, Inc., Johnson Reprint Corporation, Lea and Febiger, Princeton University Press, G. P. Putnam's Sons, and Henry Schuman, Inc.

The American Institute of Biological Sciences (Booth 12). A variety of informational material about AIBS and its activities may be secured at this booth. Copies of the "Constitution," a booklet on "AIBS Organization and Activities," reprint of "The American Institute of Biological Sciences: a Few Questions and Answers," and other publications of the AIBS will be available for free distribution. Back copies of the AIBS Bulletin will also be on sale. A member of the AIBS staff will be present to answer questions about the various activities such as the Handbook of Biological Data, the National Scientific Register, the Office of Naval Research Advisory Committees in Biology, and society business services provided by AIBS.

American Instrument Company (Booth 5). Visitors to the booth of the American Instrument Company will see the following apparatus exhibited: Rotary Warburg, Portable Electrophoresis, Electrically Heated Micro-Kjeldahl Apparatus, High-Speed Centrifuge, Coleman Model 18 pH Meter, and Coleman Model 9 Nepho Colorimeter. Staff members representing our company are Mr. Louis R. Heiss and Dr. Alfred Henley who will be pleased to discuss your instrument problems and offer their advice.

American Optical Company (Booth 11). The Instrument Division of American Optical Company will have on display in Booth No. 11 the following items: Photomicrographic Cameras, a Reflecting Objective, a Phase Microscope, also laboratory microscopes and accessories of interest to biologists. Many of the instruments on display exhibit outstanding features: Photomicrographic Camera — interchangeable bodies for the 4″ x 5″ and 35 mm film; No. 8 Phase Microscope—reduced binocular body weight, new nosepiece and ball-bearing fine adjustment; Scholar's Microscope —baffle and heat-absorbing glass in illuminator; No. 20 Stereoscopic Microscope—accommodates both large and small specimens. Representatives: J. J. Host, P. L. Piret, G. W. Frid, and J. V. Cockin will be in attendance to discuss any optical questions presented.

American Tobacco Company, Research Laboratory (Booth 8). The Research Laboratory of The American Tobacco Company demonstrates a smoking machine specially designed to facilitate investigations of the properties of tobacco smoke. This machine simulates human smoking and makes possible a reproducible collection of smoke for analysis. Through basic research in this field, means have been found for the scientific selection of tobaccos and the control of quality in manufacture. The exhibit also includes samples of cigarette tobaccos, suitably labeled and described, and a display showing steps in the manufacture of cigarette paper from virgin flax.

American Type Culture Collection (Booth 10). The American Type Culture Collection was founded under the National Research Council and is currently operated under the direction of a board having representatives of five national societies in the biological and medical fields, and also of the National Research Council and the American Institute of Biological Sciences. It aims to cooperate with biologists generally in the designation and preservation of type cultures of microorganisms and to make available for teaching and research a wide range of microorganisms useful in biochemical assays, antibiotic and vitamin production, and physiological and pathological studies. The exhibit consists of representative cultures of bacteria and fungi that are important in these respects, with particular emphasis on sets of microorganisms useful in teaching general and medical mycology and plant pathology. A mimeographed list of cultures having properties of special interest in this connection will be available for distribution.

Association of American University Presses (Booth 25). Distinguished for authoritative content and excellence of editorial work, the books of university presses claim enviable rank among non-fiction and technical publications. The Association of American University Presses has arranged a cooperative exhibit for your enjoyment at this meeting—and to give you an opportunity to purchase some of the important titles for your library.

Bausch & Lomb Optical Company (Booth 23). One of the most remarkable displays of modern instrumentation will be at the Bausch & Lomb Optical Company's booth. The very latest microscopes will be on display, demonstrated by B&L representatives. Bring along your favorite slides for examination and prove to yourself that no microscope in the world equals that of the latest Bausch & Lomb Microscope. The finest instruments are made in America by Bausch & Lomb —after you have seen them, no other microscope will satisfy your exacting needs. If you have any interest in microscopy, be sure to visit the Bausch & Lomb booth, and ask either Mr. Max Hartzel or Mr. Tom Mitchell to let you use the world's finest microscopes.

Biological Abstracts, University of Pennsylvania (Booth 13). A cooperative, non-profit abstracting and indexing service covering the world's biological literature. Leaders in the field are agreed that it is an essential tool of biologists both in teaching and research. Currently abstracting more than 3,000 journals, the coverage has been expanded by upward of 30 per cent and includes many European, Scandinavian, and Asiatic publications that are not available to the scientists of this country. Published in a complete edition and nine low-priced sectional editions specially designed for individual biologists. Dr. John E. Flynn, Editor-in-Chief, will be in attendance to welcome visitors and furnish information.

The Blakiston Company (Booth 22). You are cordially invited to visit The Blakiston Company's exhibit of outstanding texts and reference books in the field of the biological sciences. Dr. James Lackey, science editor of The Blakiston Company, will be happy to show you our most recent titles in botany, zoology, the plant sciences, horticulture, and agriculture.

Burgess Publishing Company (Booth 21). The Burgess Publishing Company of Minneapolis invites you to spend as much time as you can in leisurely browsing through their laboratory manuals, outlines, and textbooks which are on display. You will find new publications just released this year, as well as older titles which are still in constant demand. You may be considering the possibility of writing your own manual, and this will be a splendid opportunity for you to visit with either Mr. Hutchinson or Miss Conradson about any questions you may have regarding the physical makeup of your manuscript and the costs, royalties, advertising, and so forth, connected with its publication.

Carolina Biological Supply Company (Booth 15). The Carolina Biological Supply Company of Elon College, N. C., and Waubun Laboratories of Schriever, La., are represented at the 1951 meeting of the American Institute of Biological Sciences by an attractive and interesting exhibit. The exhibit includes biological materials from the Culture, Slide, Preserved Materials, and other Departments to illustrate the most up-to-date methods of cultivation of microorganisms, the preparation of microscope slides, and the preservation and injection of microscopic specimens. A staff of professional biologists have charge of the exhibit and offer a complete biological materials information service. Literature, including teaching aids, is offered free of charge to those viewing the exhibit. You are most cordially invited to visit us in our booth.

Denoyer-Geppert Company (Booth 9). Denoyer-Geppert Company will have a wide selection of accurately detailed and soundly constructed three-dimensional models, including such outstanding ones as the Generalized Dicot Flower Model, biology charts, and carefully prepared and mounted demonstration mounts and animal skeletons. Through many years of service to those working in the biological sciences, we have become thoroughly familiar with those materials which will best fit the requirements of both teachers and students. Won't you please stop at our booth? We shall be glad to cooperate with you in selecting equipment suited to your needs and interests.

Ercona Corporation—Carl Zeiss Jena Products (Booth 2). Exclusive American representatives for the entire line of Carl Zeiss Jena Scientific Instruments. The display includes the latest and most modern Zeiss Microscopes such as the LUMIPAN with built-in Illuminator, Triple Condenser Turret, Pancratic Condenser System and Phase Contrast Equipment, the new Binocular Stereoscopic Dissecting Microscope CITOPLAST with novel quintuple magnification changer, Polarimeters, Refractometers, Photometers, Spectroscopes, Micro Manipulators, Photomicrographic Equipment, Luminescence Microscope, the new revolutionary eyelevel automatic reflex camera CONTAX-S, Prism Binoculars, and many other items. Latest developments in the Carl Zeiss Jena Scientific Instrument Line will be discussed, such as UV Quartz Optics, Reflecting Optics, new Epi Condenser for incident light, Micro Projectors and others. Mr. A. Boch is in charge of the exhibit.

Hamilton Bell Company, Inc. (Booth 18). Hamilton Bell Company, Inc., manufacturers and distributors of fine quality dissection kits, instruments, slides and cover glasses, magnifiers, and many other supplies are exhibiting material for courses in Biology, Zoology, Anatomy, Physiology, Histology, etc. Specializing in this branch of the sciences, Hamilton Bell offers many values at low prices because of the concentration given to these products. Your attention is invited to our booth where you will be greeted by our representatives, Jules Vaiano and James San Vito, who are waiting to answer your questions and to aid you in the selection of supplies you will need this fall.

Houghton Mifflin Company (Booth 16). Textbooks and related materials of interest to members of AIBS are exhibited at the Houghton Mifflin booth. Douglas M. Lowe, College Representative, is in charge of this display.

The Macmillan Company (Booth 1). The book exhibit sponsored by The Macmillan Company at the September, 1951, meeting of the AIBS consists of between 250 and 300 titles. In addition to textbooks and reference works of interest to biologists, general books in the fields of gardening and outdoor life will be on display as well as titles for young people. Of special interest this year to those in attendance are the new sixth edition of COLLEGE ZOOLOGY by Hegner-Stiles and the bound proof of the forthcoming TAXONOMY OF VASCULAR PLANTS by George H. M. Lawrence. Also on display will be copies of the many new biology texts which were published in the spring.

McGraw-Hill Book Company (Booth 20). The McGraw-Hill Book Company displays textbooks in all major fields of biological science, including its series in the botanical and zoological sciences and appropriate volumes from the prom-

inent National Nuclear Energy Series. Two new books, Physiology of the Fungi by Lilly and Barnett and Anatomy of the Chordates by Weichert, will be ready in time for the exhibit. The recent second edition of Storer's General Zoology, together with Volume II of Hyman's The Invertebrates: Platyhelminthes and Rhynchocoela, are also shown. Hugh W. Handsfield, Science Editor, represents the company.

The Microcard Corporation (Booth 19). Exhibiting the latest models of Microcard Readers with a large supply of sample microcards and bulletins listing microcard editions and their publishers. Mr. and Mrs. Walter A. Blunt are in charge of the exhibit.

The C. V. Mosby Company (Booth 6). The C. V. Mosby Company is happy to participate for the first time at a meeting of the American Institute of Biological Sciences. All scientists attending this year's convention are cordially invited to visit our booth where publications of interest to the various society memberships are displayed. We shall be glad to have you come by, whether to browse, talk shop, or just say hello. Mr. Oberst and Mr. Behlke will be in attendance and looking forward to your visit.

National Spectrographic Laboratories, Inc. (Booth 14). National Spectrographic Laboratories, Inc., exhibit a spectrograph, a spectrographic excitation unit, plate processing equipment, and related laboratory equipment and supplies. The extensive analytical laboratory services of N.S.L. as applied to biological materials are illustrated by typical samples and representative analyses. Capable technical personnel, including H. M. Bedell, president, and D. R. Moore, vice president, are in attendance to discuss the applications of spectroscopy and the required instrumentation.

Radio Corporation of America (Booths 3 and 4). The RCA exhibit is a combined Television Microscopy and Electron Microscopy display and shows a comprehensive educational display of electron micrographs from microscopists throughout the world illustrating the results of latest research with the Electron Microscope. Both medical and industrial applications will be portrayed. The principle of operation and procedures will be illustrated by schematic diagrams. There will be a working demonstration of industrial television applied to both the light and ultra-violet microscope. By this means, living specimens will be seen on 16″ television screens at magnifications from 4,000 to 20,000 diameters. Representing RCA will be R. J. Miller, J. Morgan, D. Pendleton, and P. A. Greenmeyer.

W. B. Saunders Company (Booth 26). You are cordially invited to visit our exhibit in the Coffman Memorial Union where you will find on display our publications in the fields of the Biological Sciences, Chemistry, Health and Hygiene, and Medicine. These include the new revised editions of Dorland's American Illustrated Medical Dictionary, Millard and King's Human Anatomy and Physiology, the General Botany Laboratory Book by Palmquist and Petry, and many other titles widely used as texts and reference books in colleges and universities. Saunders' representatives present are Tyler Buchenau, O. G. Enstrom, and Paul E. Koerfer.

The Science Press (Booth 17). The Science Press is presenting for exhibit to biologists the advances which have been made in typewriter composition and offset printing. Considerable material has been produced during 1951 by this process. Much has been learned as to new processes available. It is the belief of The Science Press that eventually most scientific journals will go over to the typewriter composition and offset, and it is the intention of this organization to continuously add new publications to the number who have already gone over to this process. Jaques Cattell, president of The Science Press, will be in attendance with assistance at the booth. Editors are invited to discuss their printing problems.

John Wiley and Sons, Inc. (Booth 7). John Wiley and Sons, well-known scientific and technical book publishers, exhibit their full line of reference and text titles in the biological sciences. In addition to their regular list, Wiley displays books in two series of fairly recent origin—the Biological Research Series and the Biochemical Preparations Series. Also on hand are the books so far imported in the Methuen Monograph Series in Biological and Biochemical subjects. Wiley is represented in an editorial capacity by Edward F. Moody and J. K. Getman and invites all delegates to the convention to stop by and look over the exhibit.

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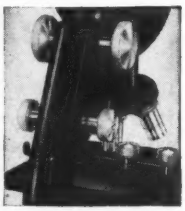

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